NIAAA

National Institute on Alcohol Abuse and Alcoholism

SURVEILLANCE REPORT #41

**LIVER CIRRHOSIS MORTALITY IN
THE UNITED STATES, 1970–93**

Samar F. DeBakey, M.D., M.P.H.[1]
Frederick S. Stinson, Ph.D.[1]
Bridget F. Grant, Ph.D. Ph.D.[2]
Mary C. Dufour, M.D., M.P.H.[2]

[1] CSR, Incorporated
    Suite 200
    1400 Eye Street, N.W.
    Washington, DC 20005

[2] Division of Biometry and Epidemiology
    National Institute on Alcohol Abuse and Alcoholism
    Willco Building, Suite 514
    6000 Executive Boulevard
    Bethesda, MD 20892-7003

December 1996

U.S. Department of Health and Human Services
Public Health Service
National Institutes of Health

HIGHLIGHTS

This surveillance report published by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) presents trends in liver cirrhosis mortality in the United States. Data were compiled on the underlying cause of death from public use data tapes published annually by the National Center for Health Statistics (NCHS). Overall cirrhosis mortality in the United States increased steadily following the end of Prohibition in 1933 until 1973, when the age-adjusted death rates peaked at 14.9 deaths per 100,000 population. Cirrhosis mortality then began a steady decline that has continued through 1993, the most recent year for which data are available. The following are highlights of liver cirrhosis mortality trends from the early 1970s through 1993:

Unadjusted Death Rates

- Unadjusted death rates from liver cirrhosis dropped by 36.4 percent, from 15.4 deaths per 100,000 population in 1970 to 9.8 deaths per 100,000 population in 1993. This decrease was consistent for the race–sex groups considered.
- Unadjusted death rates from alcohol-related liver cirrhosis dropped by 18.2 percent, from 5.5 deaths per 100,000 population in 1970 to 4.5 deaths per 100,000 population in 1993.

Age-Adjusted Death Rates

- Age-adjusted death rates from liver cirrhosis dropped by 45.9 percent, from 14.6 deaths per 100,000 population in 1970 to 7.9 deaths per 100,000 population in 1993. The decline in the rates was consistent for each race–sex group, except that rates for black females dropped by 63 percent and for black males by 51 percent.
- Age-adjusted death rates from liver cirrhosis for males were consistently more than 2 times the rates for females regardless of race.
- Age-adjusted death rates from alcohol-related liver cirrhosis dropped by 25.9 percent, from 5.4 deaths per 100,000 population in 1970 to 4.0 deaths per 100,000 population in 1993. This pattern was consistent for all race–sex groups considered. For females, the magnitude of the decline was almost double the decline for males regardless of race.

Age-Specific Death Rates

- From 1970 through 1993, age-specific death rates from liver cirrhosis decreased among decedents ages 25 to 74; however, among decedents ages 75 and older, cirrhosis mortality increased during this same period.

INTRODUCTION

This surveillance report on liver cirrhosis is one of a series of four reports published annually to detect changes in trends in alcohol consumption and alcohol-related morbidity and mortality in the United States. These surveillance reports are prepared by the Alcohol Epidemiologic Data System (AEDS), Division of Biometry and Epidemiology (DBE), NIAAA, and are intended to be useful to researchers, policymakers, and other professionals interested in alcohol abuse and its long-term effects. The data also are essential in assessing changes toward meeting the Nation's health promotion and disease prevention objective to reduce liver cirrhosis mortality by 34 percent over the years from 1987 to 2000 (Department of Health and Human Services [DHHS] 1991).

Background

Cirrhosis of the liver is an outcome of a variety of causes including alcohol consumption, viral hepatitis, exposure to various drugs and toxic chemicals, and other viral and infectious diseases (Dufour et al. 1993). Researchers estimate that alcohol consumption is a major contributor in 41 to 95 percent of deaths from cirrhosis and the related condition of alcohol hepatitis (Day 1977).

1

Based on this range, some 10,390 to 24,074 of deaths due to cirrhosis in 1993 may be attributed to excessive alcohol use.

The level and duration of alcohol consumption are important determinants in the development of liver pathology. Being the primary site for detoxification of alcohol by oxidation to its metabolites, the liver can undergo the following pathologies: fatty liver, alcoholic hepatitis, and cirrhosis. The prognosis for patients with cirrhosis is highly unpredictable. Although some patients can benefit from a liver transplant, no method exists for repairing liver damage associated with cirrhosis. However, the consequences of this disease can be treated, and life can be prolonged if patients with cirrhosis resulting from alcohol consumption abstain from further alcohol use. Thus, early detection and prevention are important in prolonging life.

The coding scheme used in the United States to classify cause of death is the International Classification of Disease (ICD), a statistical classification of disease and injury universally used by countries supporting mortality-reporting systems. ICD codes allow the determination of cause of death from cirrhosis to be related to alcohol or not related to alcohol. Because some stigma still exists for excessive alcohol use, physicians and other officials who certify causes of death might not identify alcohol in the case of a death from cirrhosis, feeling they are protecting family members. From 1970 through 1993, only 35 to 46 percent of all cirrhosis deaths were coded as alcohol related, even though researchers believe alcohol may contribute to up to 95 percent of all deaths from cirrhosis. For this reason, this surveillance report examines all cirrhosis deaths, as well as those that are explicitly coded as alcohol related.

Sources and Limitations of Data

The number of deaths and rates in this report are based on a single underlying cause for each death, defined as "the disease or injury which initiated the train of morbid events leading directly or indirectly to death or circumstances of the accident or violence which produced the fatal injury" (NCHS 1982). This approach is straightforward and consistent with other mortality statistics reported by NCHS. However, the underlying cause-of-death statistic "excludes information pertaining to the immediate cause of death, contributory causes, and those causes that intervene between the underlying and immediate causes of death" (Chamblee and Evans 1986). Therefore, underlying cause-of-death data do not fully reflect the total contribution of any particular disease to overall mortality.

For 1970 through 1993, cirrhosis death records were extracted from public use mortality data tapes produced by NCHS. With one exception, these tapes contain individual records for each death occurring in the United States. (The single exception is data for 1972, which are based on a 50-percent sample of all U.S. deaths.) The deaths counted in this report are for U.S. residents only; deaths of foreign residents in the United States are not counted. Mortality statistics for the years 1910 through 1969 were taken from special reports published by NCHS, as summarized and described in an NIAAA data reference manual on cirrhosis mortality (NIAAA 1985). These reports were prepared from numbers obtained through States' death registration offices. Data prior to 1933 did not include all registration States. The changing composition of death registration States impedes the process of obtaining comparable mortality data for the United States prior to 1933.

Population data used in calculating the rates for 1970, 1980, and 1990 come from the Decennial Census enumerations conducted during those 3 years. For other years in the three decades reported here, population data come from intercensal estimates developed for the National Cancer Institute by the U.S. Bureau of the Census. Small differences between the rates reported here and those reported in earlier surveillance reports result from recent adjustments in intercensal estimates for some years in the 1980s based on the 1990 Decennial Census enumeration.

Definitions and Subclassifications of Liver Cirrhosis

During the period for which mortality statistics are shown in this report, cause of death was classified according to eight different revisions of what is now the ICD. The ICD is revised periodically to reflect progress in medical knowledge, with later revisions generally providing greater specificity of coding.

The eighth (NCHS 1968) and ninth (World Health Organization 1978) revisions of the ICD (introduced in 1968 and 1979, respectively) provide for coding categories of cirrhosis with and without mention of alcohol. The eighth revision, abbreviated "ICDA-8," was specially adapted for use in the United States . The ninth revision, ICD-9, uses categories for cirrhosis different from those of the ICDA-8. To examine trends for comparable diseases from 1970 through 1993, ICD-9 categories must be matched and recoded to those consistent with ICDA-8 categories. The relevant crosswalk is shown in the table below, developed by AEDS project staff in conjunction with NIAAA's DBE (Colliver et al. 1984). In this report, all data for cirrhosis subclassifications are identified by ICDA-8 categories.

Race or Ethnicity of Decedent

Data are presented in this report by white and black race categories, with other races such as American Indians/Alaska Natives and Asians/Pacific Islanders included in the "all race" category but not separately. Decedents of Hispanic origin may be counted as either white or black, depending on their race. Data for decedents of Hispanic origin are not reported separately because information about ethnicity is not recorded on death certificates in all States.

METHODS

Simple statements of disease frequency, expressed as the number of deaths due to liver cirrhosis, have little epidemiologic usefulness because such information does not permit comparisons of mortality experience among various population subgroups or the description of trends over time. For common epidemiologic purposes, death rates are used to compare the frequency of death from a disease or condition. The following measures of disease frequency are used in this report to assess trends in liver cirrhosis mortality:

- *Unadjusted (or crude) death rates.*— Unadjusted (or crude) death rates are summary measures calculated by dividing

Crosswalk of ICD-9 codes to ICDA-8 codes

ICD-9		ICDA-8	
571.0	Alcoholic fatty liver	571.0	Alcohol-related liver cirrhosis
571.1	Acute alcoholic hepatitis		
571.2	Alcoholic cirrhosis of the liver		
571.3	Alcoholic liver damage, unspecified		
571.4	Chronic hepatitis	571.8	Specified liver cirrhosis without mention of alcohol
571.6	Biliary cirrhosis		
571.8	Other chronic nonalcoholic liver disease		
572.3	Portal hypertension		
571.5	Cirrhosis of the liver without mention of alcohol	571.9	Unspecified liver cirrhosis without mention of alcohol
571.9	Unspecified chronic liver disease without mention of alcohol		

the total number of deaths due to cirrhosis (or subcategories) in the population in a certain year by the total number of individuals in that population in that year (i.e., population at risk). In comparing crude rates between various years to assess any change of trends in mortality, problems can arise because the populations at risk may be different with respect to an underlying characteristic such as age, race, or sex. For example, crude rates for an older population tend to have higher rates of death for a target disease than a younger population because death from disease is more common in an aging population. In this case, comparisons of rates in different populations should be assessed by comparing age-specific rates or age-adjusted rates.

- *Age-specific death rates.*—Age-specific death rates refer to the number of deaths due to liver cirrhosis (or subcategories) in a defined age interval for a given year, divided by the total number of persons in that age interval in that year. For a given age interval, examining age-specific rates for various years allows comparison of mortality experience among subgroups of the population that do not differ in their age distribution. Age-specific rates also provide a basis for detailed study of the variation of mortality experience among different age intervals in any one year.

- *Age-adjusted death rates.*—Age-adjusted death rates are statistically constructed summary rates that account for the difference in mortality experience regardless of any difference in the age distribution between populations. Age adjustment assumes that populations have the same age distribution and applies a standard age-distribution to calculate age-adjusted rates for various populations. Therefore, when comparing age-adjusted rates of two populations, any differences between the rates can no longer be due to the difference in the age distribution between the two populations. Age-adjustment is especially crucial for

standardizing rates over many years because the U.S. population has been growing progressively older in recent decades; without age adjustment, any apparent increases in unadjusted mortality rates for cirrhosis (or any other disease) could be caused by the fact that older people are more likely to die from disease.

Age-adjusted death rates presented in this report were computed by using 10-year age intervals of the enumerated population of the United States in 1940 as the standard population. The choice of the 1940 population as a standard is an arbitrary and historical convention that allows for meaningful comparison of similar rates published from many different sources. The basic procedure involved finding the expected number of deaths that would have existed if the age-specific rates for a particular year prevailed in a population whose age distribution was like that of the United States in 1940. This was accomplished by multiplying the specific rates for each age group by the population for the corresponding age group in the standard population. The age-adjusted mortality rate was calculated by adding the expected deaths for each age group and then dividing this sum by the total population taken as the standard. The 1940 standard population is as follows:

Age group	Number
0 to 4 years	80,061
5 to 14 years	170,355
15 to 24 years	181,677
25 to 34 years	162,066
35 to 44 years	139,237
45 to 54 years	117,811
55 to 64 years	80,294
65 to 74 years	48,426
75 to 84 years	17,303
85+ years	2,770
All ages	1,000,000

RESULTS

This surveillance report provides an overview of trends in liver cirrhosis by sex from 1910 through 1993. Data on the

subcategories of liver cirrhosis by sex, race, and age are presented for 1970 through 1993. Overall, trends from 1970 through 1993 can be characterized as beginning high, peaking in the early 1970s, and then decreasing over time. Discussion of trends in the last three decades will focus on decreases from 1970, which will serve as a baseline for all observed changes. Detailed data supporting the findings discussed here are shown in four tables at the end of this report. These tables provide data on (1) the trends in death rates from liver cirrhosis between 1910 and 1993; (2) the number of deaths, crude-death rates, age-specific death rates, and age-adjusted death rates from liver cirrhosis by race and sex over the past 23 years; and (3) the number of deaths, age-specific death rates, and age-adjusted deaths from alcohol-related, specified, and unspecified liver cirrhosis during the past 23 years.

Historical Perspective, 1910–93

Figure 1 on the following page shows the history of age-adjusted liver cirrhosis mortality rates by sex from 1910 through 1993. Death rates from cirrhosis during 1910 through 1914 were higher than at any time since then. After 1914 rates steadily decreased to reach a historical low of 8.0 per 100,000 population in 1932, when the temperance movement was gaining support in the United States (national Prohibition was enacted in 1920). Cirrhosis mortality increased steadily at the end of Prohibition in 1933 until 1973, when the age-adjusted death rates peaked at 14.9 per 100,000 population. A steady decrease then ensued, and by 1993 the age-adjusted mortality rate had dropped to 7.9 per 100,000 population. From 1910 through 1993, age-adjusted cirrhosis death rates were consistently about twice as high for males as for females.

Based on annual mortality statistics, liver cirrhosis has been the 11th leading cause of death in the United States since 1990. Between 1982 and 1989, cirrhosis was the ninth leading cause of death in the United States, dropping from seventh place during most of the 1970s and eighth place between 1978 and 1981. In 1993 liver cirrhosis was

ranked as the seventh leading cause of death among people ages 25 to 44 and people ages 45 to 64.

Liver Cirrhosis (ICDA-8: all 571), 1970–93

Following a slight increase from 1970 through 1973, unadjusted death rates from liver cirrhosis steadily decreased. Unadjusted death rates dropped by 36.4 percent from 15.4 deaths per 100,000 population in 1970 to a low of 9.8 deaths per 100,000 population in 1993. A more pronounced decrease of 45.9 percent, from 14.6 deaths per 100,000 population in 1970 to 7.9 deaths per 100,000 population in 1993, was detected when age-adjusted rates were examined. The noted decline in liver cirrhosis mortality during this study period is independent of the change in age distribution of the U.S. population because the decline still existed after adjusting for age.

Similar decreases in age-adjusted death rates occurred from 1970 to 1993 in different race–sex groups (62.7 percent for black females, 50.8 percent for black males, 47.1 percent for white females, and 42.0 percent for white males). Figure 2 shows trends for all liver cirrhosis mortality for black and white males and females. Liver cirrhosis mortality rates for whites and blacks reflect a greater risk for men of both races. Rates for blacks are higher than those for whites of the same sex for every year from 1970 through 1993. Figure 3 shows age-specific rates for liver cirrhosis mortality. Although the order of risk for cirrhosis mortality by age group changed from 1970 through 1993, risks among those younger than age 45 and those age 85 or older tended to be lower than for other age groups. During the past 23 years, age-specific rates decreased for all age groups below age 75, but for those age 75 years or older, cirrhosis mortality increased. Changes since 1970 for each age group were as follows: ages 25 to 34, -61.4 percent; ages 35 to 44, -52.6 percent; ages 45 to 54, -56.0 percent; ages 55 to 64, -45.1 percent; ages 65 to 74, -21.7 percent; ages 75 to 84, 6.5 percent; ages 85 and older, 0.5 percent.

Figure 4 shows age-specific cirrhosis mortality rates by race and sex. For all age

Figure 1. Age-adjusted death rates of liver cirrhosis by sex (death-registration States, 1910–32, and United States, 1933–93).
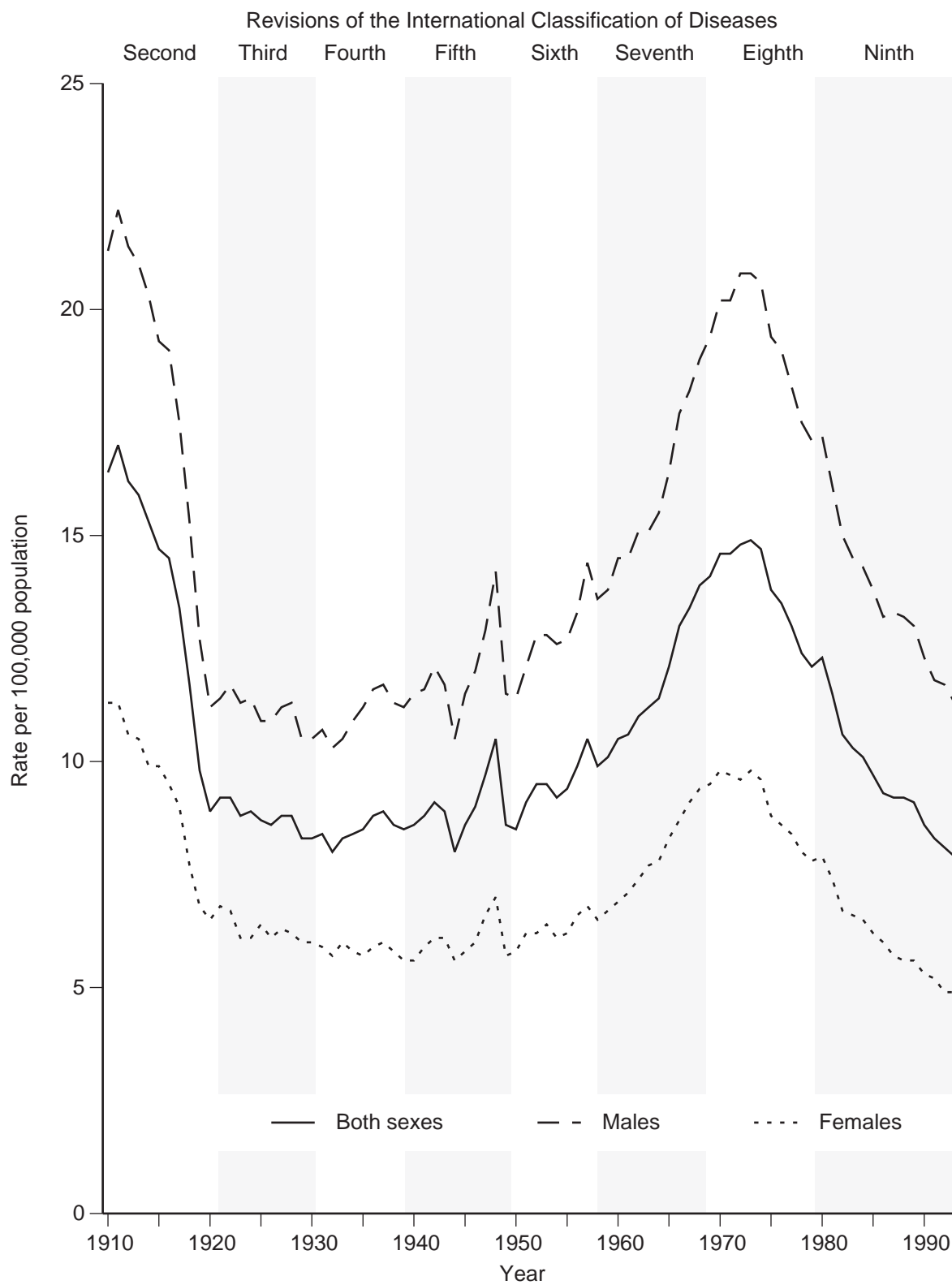
Figure 2. Age-adjusted death rates of liver cirrhosis (ICDA-8: all 571) by sex and race, United States, 1970–93.
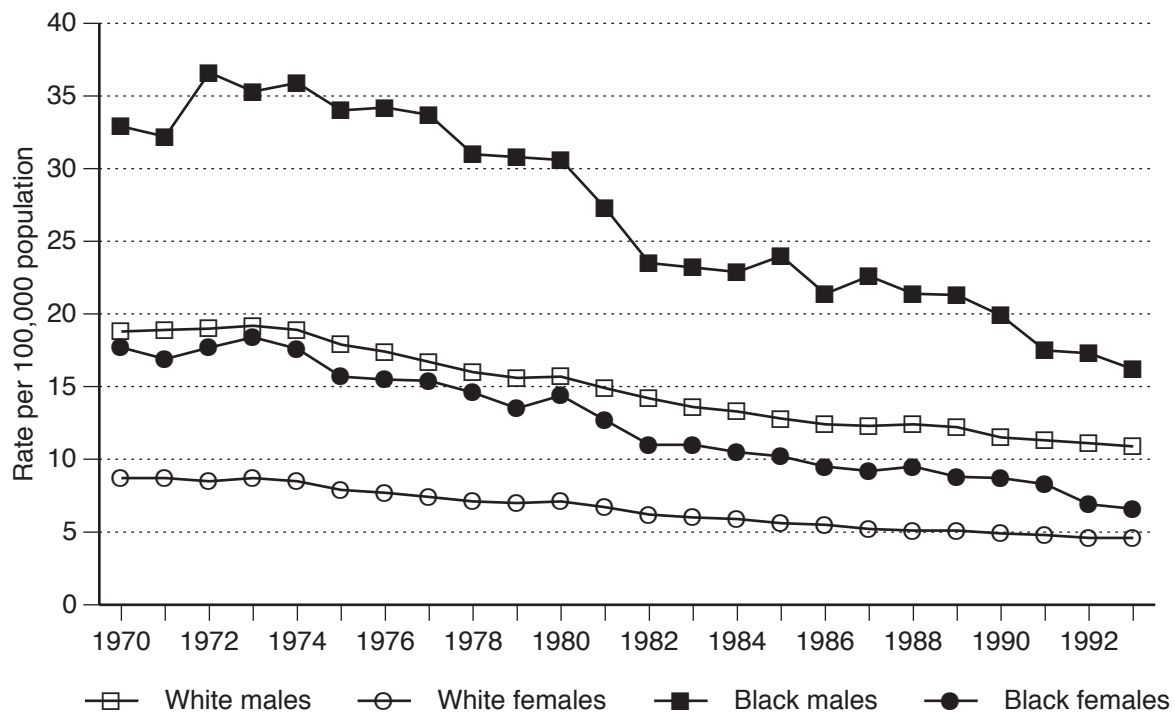
groups among whites and blacks, the rate for males is greater than the rate for females. In age groups below age 65, rates for blacks are higher than rates for whites in both sex groups. The relative decline in liver cirrhosis mortality was greatest among black males and females younger than age 55.

As discussed earlier, the ICD allows for coding the alcohol involvement in cirrhosis deaths. Figure 5 shows age-adjusted mortality rates for three subcategories of liver cirrhosis. This figure shows little apparent change in ranks of the different types of cirrhosis during the period 1970 through 1993, except that the ranks of unspecified cirrhosis and alcohol-related cirrhosis shifted after 1987, when alcohol-related cirrhosis became the highest among the three causes considered. However, figure 6 shows that the percentage of all cirrhosis deaths coded as alcohol related for different age groups increased over time in all but the two oldest age groups. In addition, the increases tend to be greater in the younger age groups. In 1993 the percentage of alcohol-

related cirrhosis among all cirrhosis deaths was highest among people ages 35 to 44.

Alcohol-Related Liver Cirrhosis (ICDA-8: 571.0), 1970–93

Unadjusted death rates from alcohol-related liver cirrhosis decreased by 18.2 percent, from 5.5 deaths per 100,000 population in 1970 to 4.5 deaths per 100,000 population in 1993. Age-adjusted rates also decreased 25.9 percent from 5.4 deaths per 100,000 population in 1970 to 4.0 deaths per 100,000 population in 1993.

As shown in figure 7, age-adjusted death rates among different race–sex groups show a decline over the past 23 years that amounts to 54.9 percent for black females, 37.1 percent for black males, 33.3 percent for white females, and 18.1 percent for white males. During the study period, age-adjusted rates for the different race–sex groups in descending order were as follows: black males, white males, black females, and white females. In 1993 the rate for black males exceeded the rate for white males by 61.0 percent. During the

7

Figure 3. Age-specific death rates of liver cirrhosis (ICDA-8: all 571),
United States, 1970–93.
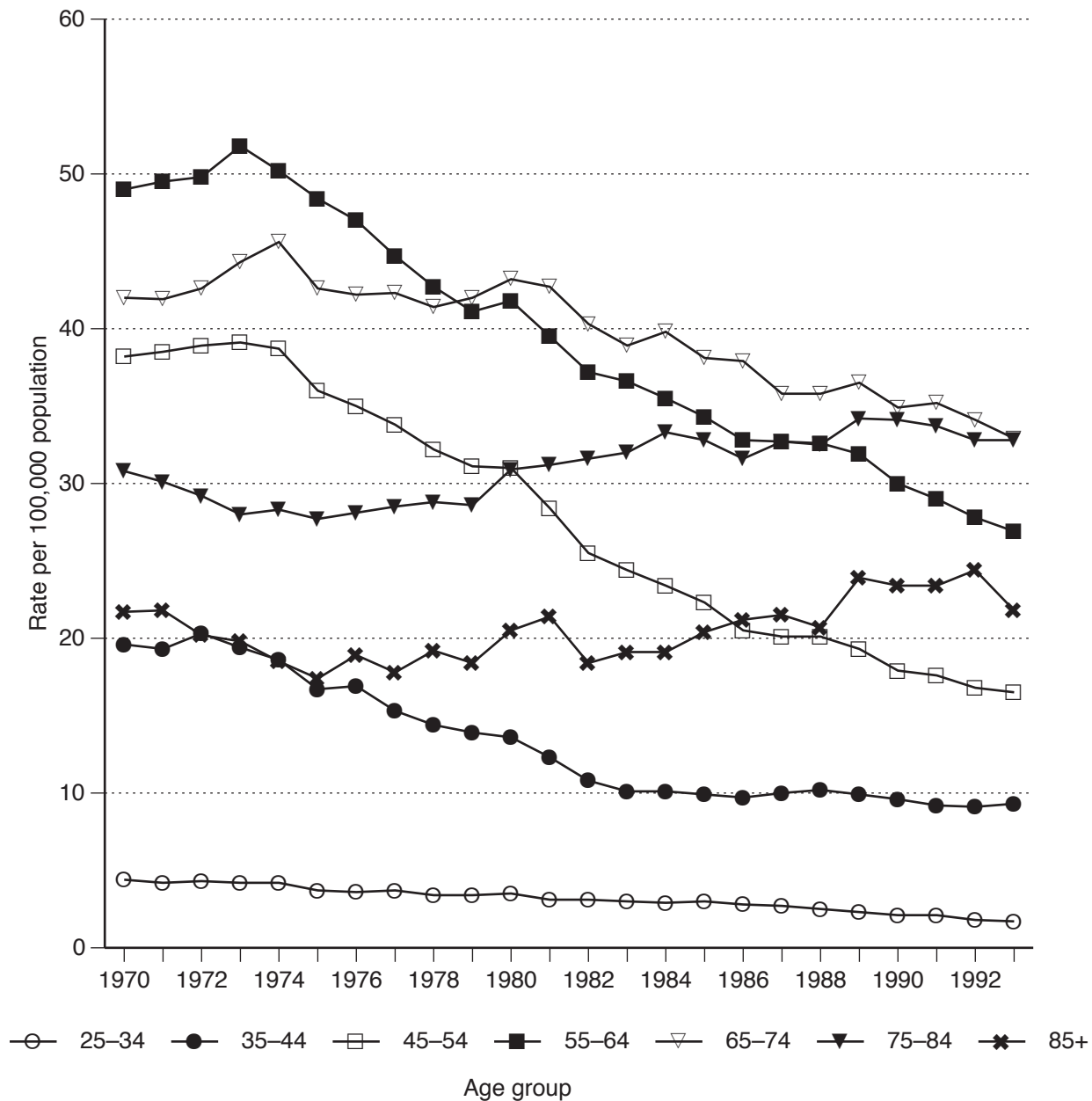
study period, the gap between the rates for males of different race groups narrowed, with black male rates experiencing a prominent decline.

Specified Liver Cirrhosis Without Mention of Alcohol (ICDA-8: 571.8), 1970–93

Unadjusted death rates from specified liver cirrhosis without mention of alcohol declined by 77.8 percent, from a high of 2.7 deaths per

100,000 population in 1970 to 0.6 deaths per 100,000 population in 1993. The age-adjusted rates have shown the same declining trend, dropping 80.8 percent from 2.6 deaths per 100,000 population in 1970 to 0.5 deaths per 100,000 population in 1993.

Figure 8 shows that age-adjusted rates among race–sex groups declined from 1970 through 1993 by 87.3 percent for black males,

84.6 percent for black females, 82.8 percent for white males, and 77.8 percent for white females. During the study period, the age-adjusted rates for the different race–sex groups in descending order were as follows: black males, black females, white males, and white females. The gap that existed between rates for the different race–sex groups has virtually disappeared, with both black male and female rates experiencing a prominent decline.

Unspecified Liver Cirrhosis Without Mention of Alcohol (ICDA-8: 571.9), 1970–93

Unadjusted death rates from unspecified liver cirrhosis without mention of alcohol decreased by 34.7 percent from 7.2 deaths per 100,000 population in 1970 to 4.7 deaths per 100,000 population in 1993. Age-adjusted deaths rates also dropped 47.0 percent from 6.6 deaths per 100,000 population in 1970 to 3.5 deaths per 100,000 population in 1993.

As shown in figure 9, age-adjusted death rates among different race–sex groups show a fairly consistent decline over the last 23 years that amounts to 58.8 percent for black females, 48.7 percent for black males, 47.1 percent for white males, and 45.2 percent for white females. During the study period, the age-adjusted rates for the different race–sex groups in descending order were as follows: black males, white males, black females, and white females. The gap that existed between the rates for the different race–sex groups has narrowed, with both white and black male rates experiencing a prominent decline.

DISCUSSION

Liver cirrhosis mortality has been declining since 1973, dropping from the 7th leading cause of death for most of the 1970s to the 11th leading cause of death in the 1990s, following human immunodeficiency virus infection (8th), suicide (9th), and homicide and legal intervention (10th) (NCHS 1996). Age-adjusted, all-cause mortality rates declined 28 percent during the 23-year period compared with a 45.9-percent decline for overall liver cirrhosis. This finding suggests that the drastic decline in deaths from liver cirrhosis is not just a reflection of the decline in all-cause mortality. The observed changes in trends in liver cirrhosis mortality during the study period were consistent in each race–sex group when age-adjusted rates were compared. Age-specific death rates of cirrhosis dropped more consistently for the younger age groups. This differential drop in death rates in the younger age groups compared with older age groups is consistent with (1) successful primary prevention efforts from increased awareness of liver cirrhosis risk factors such as alcohol use and (2) successful secondary prevention resulting from early diagnosis and treatment of both alcoholism and liver cirrhosis that can improve survival or delay disease onset.

Before 1979 the peak age-specific death rate for all liver cirrhosis cases was detected in a younger age group (55–64 years old), which contrasts with the period after 1979, when the peak age-specific death rate fell in the 65–74 age group. This trend is consistent with improved survival rates and delayed disease onset among cirrhosis patients.

In the face of declining trends in liver cirrhosis mortality since the early 1970s, data gathered between 1970 and 1990 with NCHS's ongoing National Hospital Discharge Survey show an increase in hospital discharge episodes with cirrhosis diagnosis until 1981, when a decline ensued (Noble et al. 1993; Dufour et al. 1993). The data also show that the percentage of cirrhosis patients who died during hospitalization declined between 1970 and 1990 (Noble et al. 1993; Dufour et al. 1993). These results are consistent with increased cirrhosis identification and treatment as well as improved survival among cirrhosis patients.

Although mortality from cirrhosis is highly associated with alcohol consumption in the medical literature, the current declining trend in liver cirrhosis mortality has not been preceded by a decline in apparent per capita alcohol consumption. Annual per capita alcohol consumption increased steadily after Prohibition until 1981, after which a long decline ensued (Williams et al. 1993). The

10

Figure 4. Age-specific death rates of liver cirrhosis by race and sex, United States, 1970–91.

Note: Different age groups have different vertical scales (i.e., rates vary substantially by age).

Age group: 55 to 64

☐ White males   ■ Black males   ○ White females   ● Black females

Age group: 65 to 74

☐ White males   ■ Black males   ○ White females   ● Black females

Age group: 75 to 84

☐ White males   ■ Black males   ○ White females   ● Black females

Age group: 85 and older

☐ White males   ■ Black males   ○ White females   ● Black females
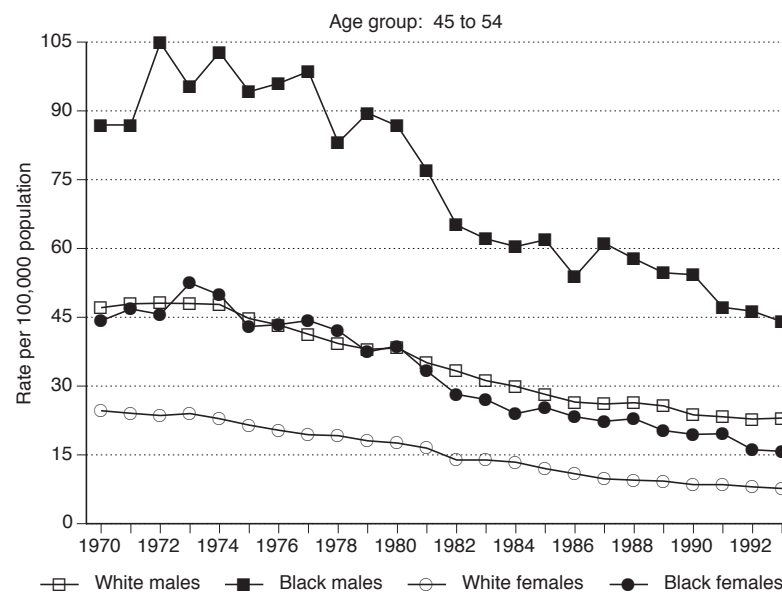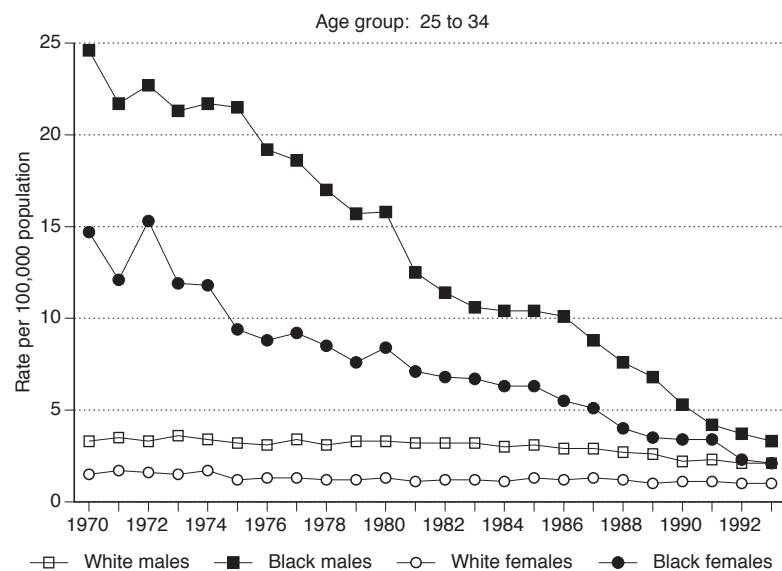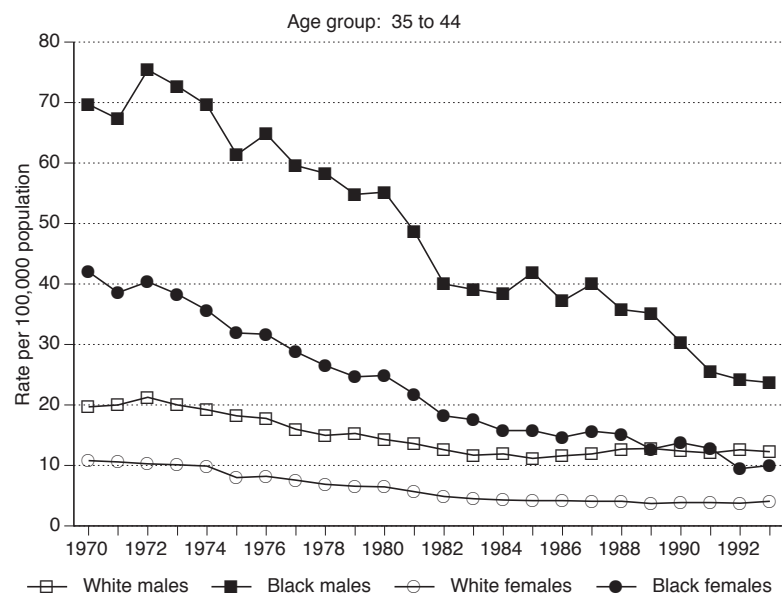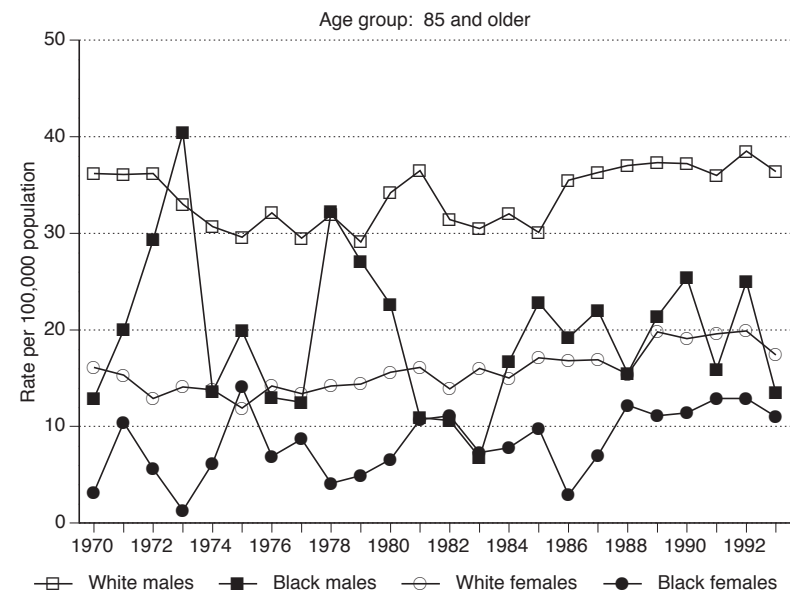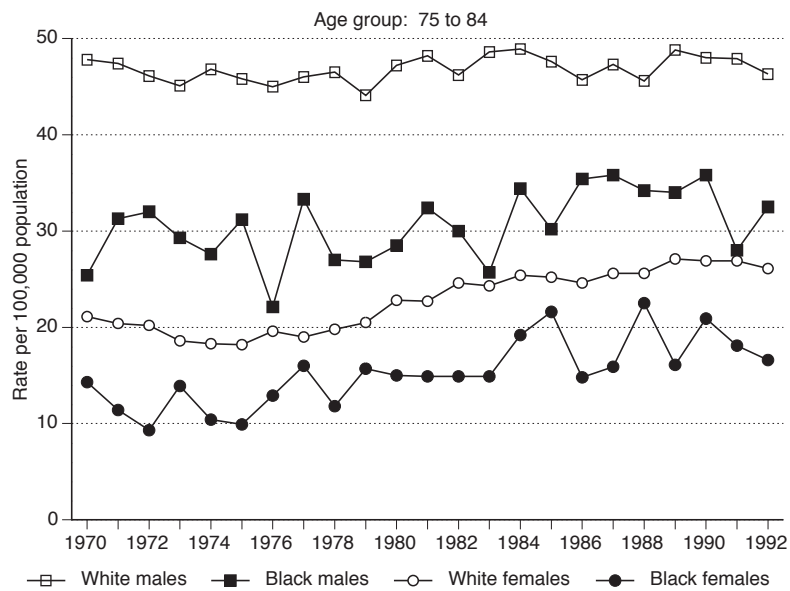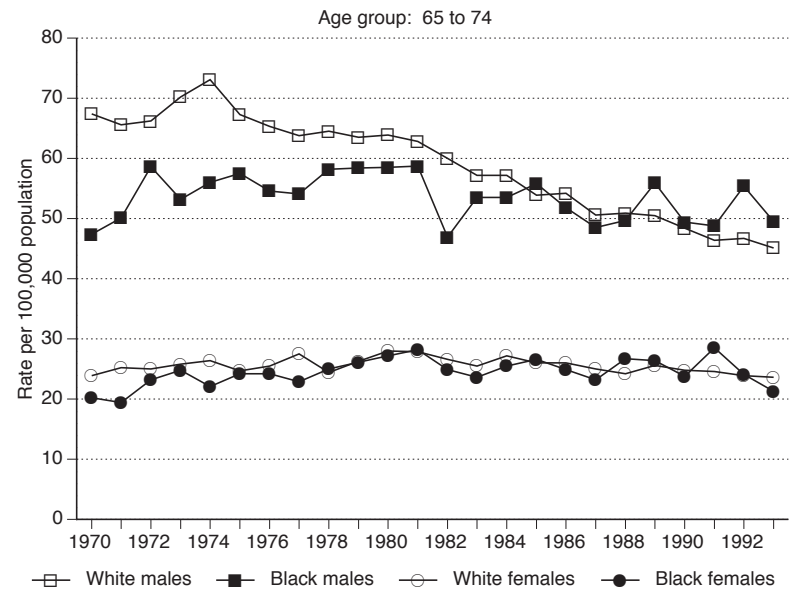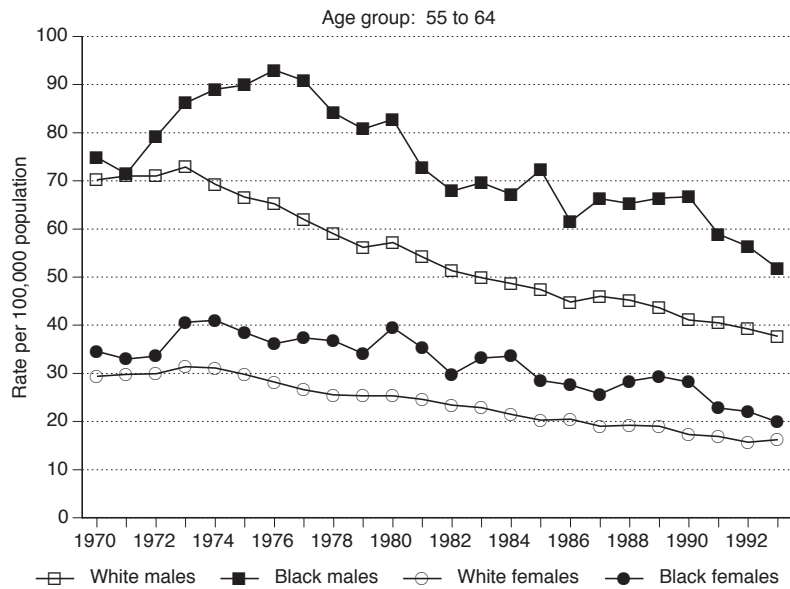
Figure 5. Age-adjusted death rates of liver cirrhosis reported with and without mention of alcohol, United States, 1970–93.

Alcohol-related cirrhosis (ICDA-8: 571.0)

Specified cirrhosis without mention of alcohol (ICDA-8: 571.8)

Unspecified cirrhosis without mention of alcohol (ICDA-8: 571.9)
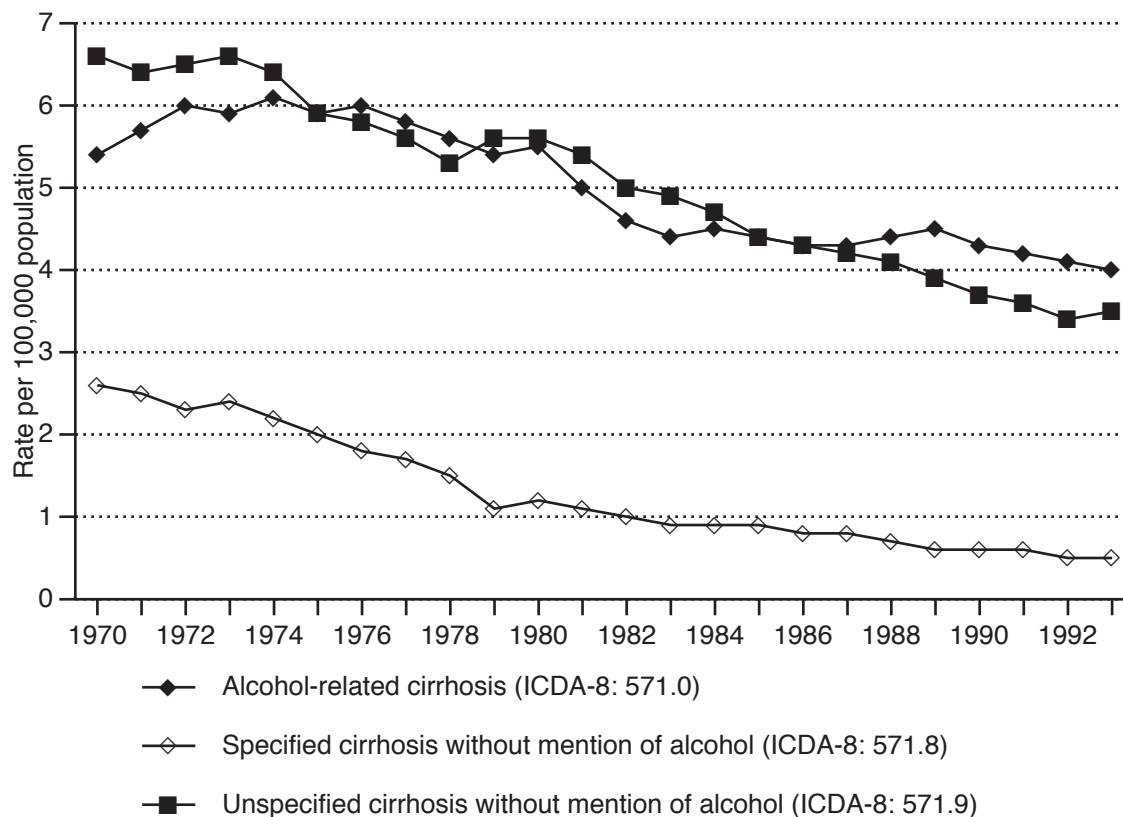
decline in per capita alcohol consumption is attributed to decreased drinking by many types of drinkers. However, the literature suggests that only reductions in drinking by heavy drinkers translate into decline in death rates from liver cirrhosis (Smart and Mann 1992). Recent data from National Health Interview Survey indicate that the percentage of self-reported heavier drinkers dropped significantly between 1983 and 1988 (Williams and DeBakey 1992).

Because it has been estimated that (1) 14–50 percent of alcoholics develop cirrhosis or severe liver damage during an 8-year period (Lelbach 1974); (2) approximately 50 percent of treated alcoholics could delay the onset of the disease process or delay mortality; and (3) 50 percent of alcoholics undergoing Alcoholics Anonymous (AA) programs sufficiently reduce their drinking to avoid getting cirrhosis or dying from it (Smart and Mann, 1993), more recognition and treatment

of alcoholism could be contributing to the declining trends in mortality from liver cirrhosis. According to data from the National Drug and Alcohol Treatment Utilization Survey, the number of alcoholics in treatment on a given day more than doubled between 1979 and 1991. AA membership increased in an equally dramatic fashion between 1979 and 1989 (Dufour et al. 1993). Both these factors may have contributed to the declining trends in cirrhosis mortality.

Finally, these data suggest a decline in liver cirrhosis death rates that will help the United States achieve the Healthy People 2000 objective of no more than 6.0 deaths per 100,000 population by the Year 2000. Between 1987 and 1993, the decline amounted to 14 percent (from 9.2 deaths per 100,000 population in 1987 to 7.9 deaths per 100,000 population in 1993). To achieve the Year 2000 goal, the death rate for liver cirrhosis must decline by 24 percent after 1993. This is a

Figure 6. Percent of all cirrhosis (ICDA-8: all 571) deaths coded as alcohol-related (ICDA-8: 571.0), United States, 1970–93.
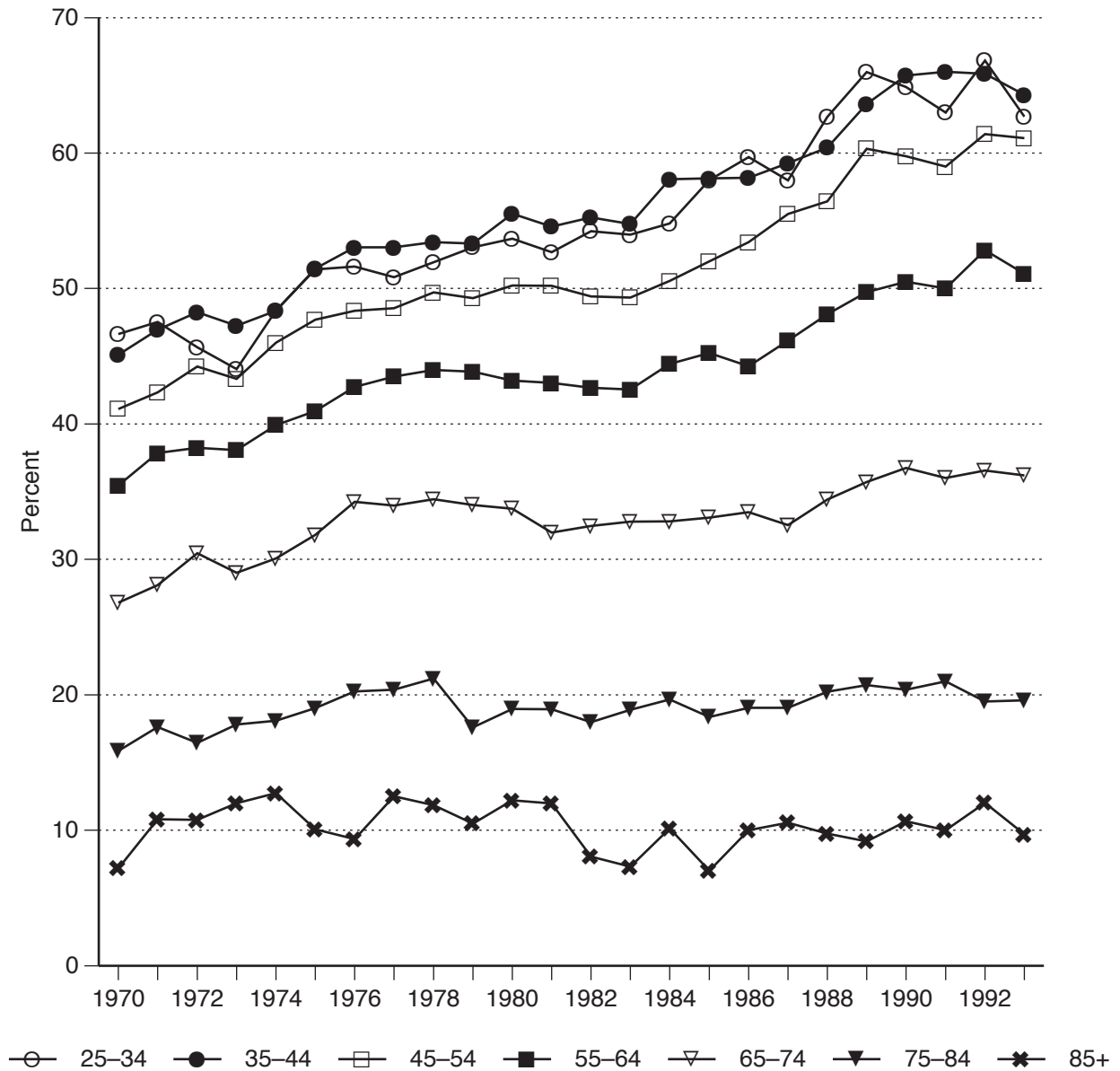
difficult but still-attainable goal, if national efforts continue to concentrate on prevention, reductions in heavy and chronic alcohol use, and early detection and treatment of liver cirrhosis.

REFERENCES

Chamblee, R.F., and Evans, M.C. TRANSAX: The NCHS system for producing multiple cause-of-death statistics, 1968-1978. *Vital and Health Statistics*, Series 1, No. 20. DHHS Pub. No. (PHS) 86-1322. Washington, DC: U.S. Govt. Print. Off., June 1986.

Colliver, J.D.; Van Natta, P.; Dufour, M.; Bertolucci, D.; and Malin, H. A system to convert ICD diagnostic codes for alcohol research. *Morbidity and Mortality Weekly Report* 33(16):216-222, 1984.

Figure 7. Age-adjusted death rates of alcohol-related liver cirrhosis (ICDA-8: 571.0) by race and sex, United States, 1970–93.

| ─☐─ White males | ─○─ White females | ─■─ Black males | ─●─ Black females |
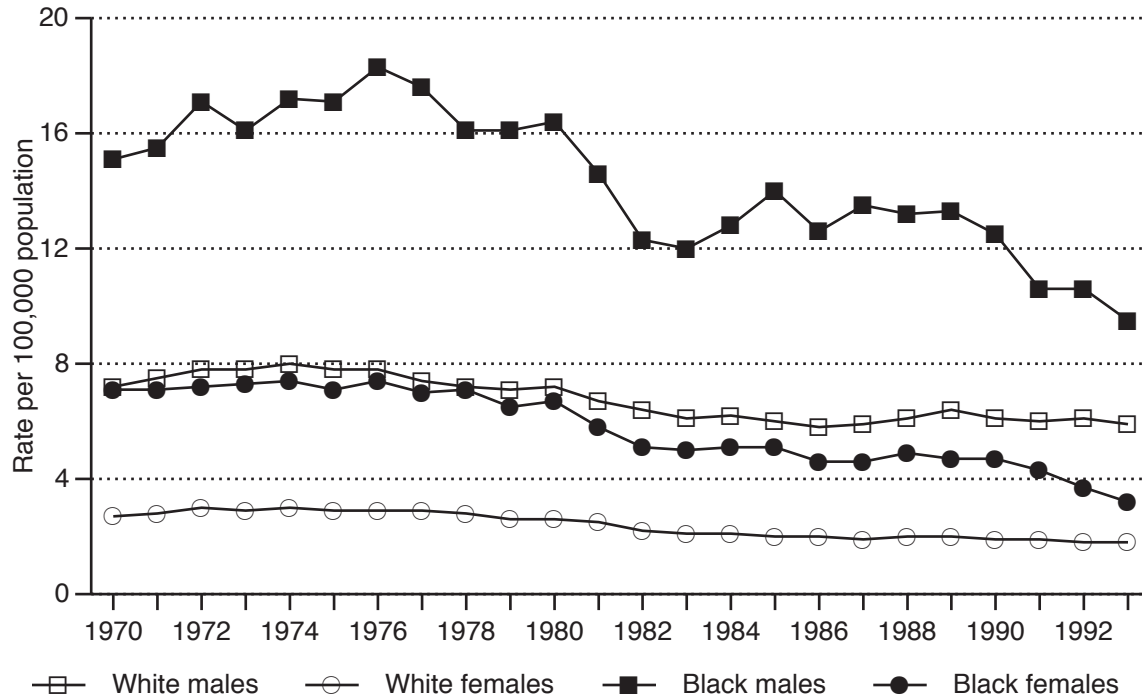
Figure 8. Age-adjusted death rates of specified liver cirrhosis without mention of alcohol (ICDA-8: 571.8) by race and sex, United States, 1970–93.

| ─☐─ White males | ─○─ White females | ─■─ Black males | ─●─ Black females |
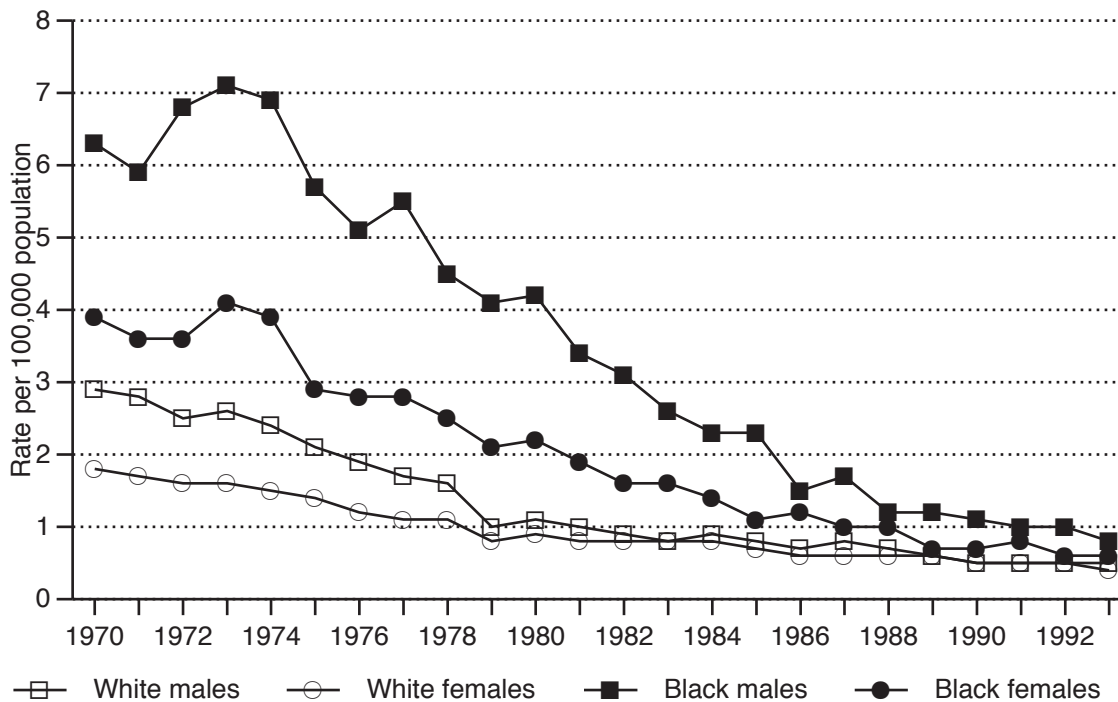
Figure 9. Age-adjusted death rates of unspecified liver cirrhosis without mention of alcohol (ICDA-8: 571.9) by race and sex, United States, 1970–93.
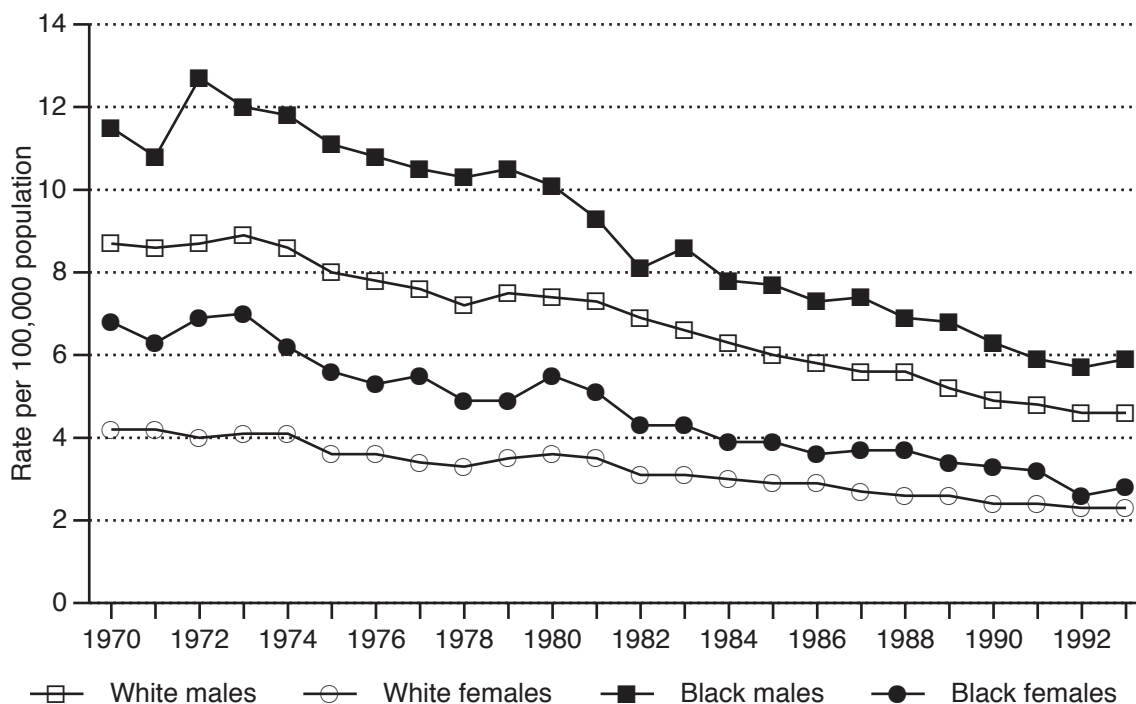
Day, N. "Alcohol and Mortality." Unpublished paper prepared for the National Institute on Alcohol Abuse and Alcoholism under Contract No. NIA-76-10(p), 1977.

Department of Health and Human Services. *Healthy People 2000: National Health Promotion and Disease Prevention Objectives.* DHHS Pub. No. PHS 91-50213. Washington, DC: DHHS, 1991.

Dufour, M.C.; Stinson, F.S.; and Caces, M.F. Trends in cirrhosis morbidity and mortality: United States, 1979-1988. *Seminars in Liver Disease* 13(2), 1993.

Lelbach, W.K. Organic pathology related to volume and pattern of alcohol use. In: Gibbins, R.J.; Israel, V.; Kalant, H.; Popham, R.E.; Schmidt, W.; and Smart, R.G. Eds. *Research Advances in Alcohol and Drug Problems*, Vol. 1. New York: John Wiley and Sons, 1974.

National Center for Health Statistics. Advance Report of Final Mortality Statistics, 1993. *Monthly Vital Statistics Report.* Hyattsville, MD: NCHS. February, 1996.

National Center for Health Statistics. *Instructions for Classifying the Underlying Cause of Death, 1983.* Hyattsville, MD: NCHS September 1982.

National Center for Health Statistics. *Eighth Revision, International Classification of Diseases Adapted for Use in the United States.* DHEW Pub. No. (PHS) 1693. Washington, DC: U.S. Government Printing Office, 1968.

National Institute on Alcohol Abuse and Alcoholism (Alcohol Epidemiologic Data System). *Liver Cirrhosis Mortality in the United States* [U.S. Alcohol Epidemiologic Data Reference Manual Volume 2]. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, September 1985.

Noble, J.A.; Caces, F.M.; Steffens, R.A.; and Stinson, F.S. Hospitalization trends and the decline in liver cirrhosis death rates, 1970-1987. *Public Health Reports* 108(2):192-197, 1993.

Smart, R.G. and Mann, R.E. Recent liver cirrhosis declines: Estimates of impact of alcohol abuse treatment and Alcoholics Anonymous. *Addiction* 88:193-198, 1993.

Smart, R.G. and Mann, R.E. Alcohol and the epidemiology of liver cirrhosis. *Alcohol Health & Research World* 16(3):217-222, 1992.

Williams, G.D., and DeBakey, S.F. Changes in levels of alcohol consumption: United States 1983-1988. *British Journal of Addictions* 87:643-648, 1992.

Williams, G.D.; Clem, D.A.; and Dufour, M.C. *Surveillance Report #27: Apparent Per Capita Alcohol Consumption: National, State, and Regional Trends, 1977-91.* Rockville, MD: NIAAA, Division of Biometry and Epidemiology, Alcohol Epidemiologic Data System, November 1993.

World Health Organization. *International Classification of Diseases, 9th Revision.* Geneva, Switzerland: the Organization, 1978.

Table 1. Age-adjusted death rates[1] from liver cirrhosis by sex (death registration States, 1910–32, and United States, 1933–93).

Year	Both sexes	Males	Females	Year	Both sexes	Males	Females
1993....................	7.9	11.3	4.9	1951	9.1	12.1	6.2
1992....................	8.1	11.7	4.9	1950	8.5	11.4	5.8
1991....................	8.3	11.8	5.2	1949	8.6	11.5	5.7
1990....................	8.6	12.3	5.3	1948	10.5	14.2	7.0
1989....................	9.1	13.0	5.6	1947	9.7	12.9	6.6
1988....................	9.2	13.2	5.6	1946	9.0	12.0	6.0
1987....................	9.2	13.3	5.7	1945	8.6	11.5	5.8
1986....................	9.3	13.2	6.0	1944	8.0	10.5	5.6
1985....................	9.7	13.8	6.2	1943	8.9	11.7	6.1
1984....................	10.1	14.3	6.5	1942	9.1	12.1	6.1
1983....................	10.3	14.5	6.6	1941	8.8	11.6	5.9
1982....................	10.6	15.0	6.7	1940	8.6	11.5	5.6
1981....................	11.5	16.1	7.4	1939	8.5	11.2	5.6
1980....................	12.3	17.2	7.9	1938	8.6	11.3	5.8
1979....................	12.1	17.1	7.8	1937	8.9	11.7	6.0
1978....................	12.4	17.5	8.0	1936	8.8	11.6	5.9
1977....................	13.0	18.3	8.4	1935	8.5	11.2	5.7
1976....................	13.5	19.1	8.6	1934	8.4	10.9	5.8
1975....................	13.8	19.4	8.8	1933[3]..................	8.3	10.5	6.0
1974....................	14.7	20.6	9.6	1932	8.0	10.3	5.7
1973....................	14.9	20.8	9.8	1931	8.4	10.7	5.9
1972[2]	14.8	20.8	9.6	1930	8.3	10.5	6.0
1971....................	14.6	20.2	9.7	1929	8.3	10.5	6.0
1970....................	14.6	20.2	9.8	1928	8.8	11.3	6.2
1969....................	14.1	19.4	9.5	1927	8.8	11.2	6.3
1968....................	13.9	18.9	9.4	1926	8.6	10.9	6.1
1967....................	13.4	18.2	9.1	1925	8.7	10.9	6.4
1966....................	13.0	17.7	8.7	1924	8.9	11.4	6.1
1965....................	12.1	16.4	8.3	1923	8.8	11.3	6.1
1964....................	11.4	15.5	7.8	1922	9.2	11.7	6.7
1963....................	11.2	15.1	7.7	1921	9.2	11.4	6.8
1962....................	11.0	15.1	7.4	1920	8.9	11.2	6.5
1961....................	10.6	14.5	7.1	1919	9.8	12.7	6.8
1960....................	10.5	14.5	6.9	1918	11.7	15.3	7.7
1959....................	10.1	13.8	6.7	1917	13.4	17.5	9.0
1958....................	9.9	13.6	6.5	1916	14.5	19.1	9.5
1957....................	10.5	14.4	6.8	1915	14.7	19.3	9.9
1956....................	9.9	13.3	6.6	1914	15.3	20.3	9.9
1955....................	9.4	12.7	6.2	1913	15.9	21.0	10.5
1954....................	9.2	12.6	6.1	1912	16.2	21.4	10.6
1953....................	9.5	12.8	6.4	1911	17.0	22.2	11.3
1952....................	9.5	12.8	6.2	1910	16.4	21.3	11.3

[1] Rates per 100,000 population computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940.

[2] Deaths based on a 50-percent sample.

[3] Reporting States increased from 10 States and the District of Columbia in 1900 to the entire contiguous United States in 1933.

Table 2. Age-specific number of deaths, age-specific death rates, and age-adjusted death rates[1] from all liver cirrhosis (ICD-9: 571 and 572.3), United States, 1970–93.

Race, sex, and year	Number of deaths, by age group									Deaths per 100,000 population, by age group								Age-adjusted deaths per 100,000 population
	All[2]	0–24	25–34	35–44	45–54	55–64	65–74	75–84	85+	All	25–34	35–44	45–54	55–64	65–74	75–84	85+	
All races, both sexes																		
1993	25,341	81	726	3,772	4,723	5,637	6,124	3,519	746	9.8	1.7	9.3	16.5	26.9	32.9	32.8	21.8	7.9
1992	25,407	70	769	3,619	4,592	5,807	6,300	3,445	799	10.0	1.8	9.1	16.8	27.8	34.1	32.8	24.4	8.1
1991	25,562	66	864	3,596	4,470	6,076	6,258	3,475	739	10.1	2.0	9.2	17.4	28.9	34.2	33.9	23.4	8.3
1990	25,920	76	894	3,623	4,517	6,332	6,311	3,439	713	10.4	2.1	9.6	17.9	30.0	34.9	34.1	23.4	8.6
1989	26,823	91	985	3,618	4,744	6,787	6,520	3,361	708	10.9	2.3	9.9	19.3	31.9	36.5	34.2	23.9	9.1
1988	26,572	87	1,061	3,581	4,801	7,020	6,303	3,116	595	10.9	2.5	10.2	20.1	32.6	35.8	32.5	20.7	9.2
1987	26,351	105	1,147	3,431	4,640	7,112	6,244	3,058	606	10.9	2.7	10.0	20.1	32.7	35.8	32.7	21.5	9.2
1986	26,310	109	1,186	3,207	4,646	7,203	6,494	2,877	580	11.0	2.8	9.7	20.5	32.8	37.9	31.6	21.2	9.3
1985	26,927	100	1,250	3,126	4,995	7,586	6,410	2,907	542	11.3	3.0	9.9	22.3	34.3	38.1	32.8	20.4	9.7
1984	27,468	126	1,168	3,084	5,244	7,856	6,609	2,880	494	11.6	2.9	10.1	23.4	35.5	39.8	33.3	19.1	10.1
1983	27,414	121	1,210	2,967	5,461	8,097	6,377	2,693	479	11.7	3.0	10.1	24.4	36.6	38.9	32.0	19.1	10.3
1982	27,838	147	1,204	3,021	5,726	8,194	6,501	2,591	447	12.0	3.1	10.8	25.5	37.2	40.3	31.6	18.4	10.6
1981	29,451	160	1,196	3,247	6,413	8,661	6,772	2,492	501	12.8	3.1	12.3	28.4	39.5	42.7	31.2	21.4	11.5
1980	30,730	180	1,293	3,498	7,077	9,081	6,738	2,389	459	13.6	3.5	13.6	31.0	41.8	43.2	30.9	20.5	12.3
1979	29,851	155	1,229	3,502	7,142	8,810	6,437	2,166	400	13.3	3.4	13.9	31.1	41.1	42.0	28.6	18.4	12.1
1978	30,066	178	1,180	3,506	7,453	8,996	6,209	2,132	397	13.5	3.4	14.4	32.2	42.7	41.4	28.8	19.2	12.4
1977	30,848	195	1,259	3,594	7,905	9,261	6,208	2,062	352	14.0	3.7	15.3	33.8	44.7	42.3	28.5	17.8	13.0
1976	31,453	183	1,172	3,886	8,263	9,558	6,040	1,985	353	14.5	3.6	16.9	35.0	47.0	42.2	28.1	18.9	13.5
1975	31,623	215	1,169	3,808	8,547	9,688	5,942	1,930	318	14.7	3.7	16.7	36.0	48.4	42.6	27.7	17.4	13.8
1974	33,319	227	1,257	4,237	9,205	9,926	6,208	1,929	322	15.6	4.2	18.6	38.7	50.2	45.6	28.3	18.5	14.7
1973[3]	33,350	222	1,201	4,412	9,305	10,114	5,898	1,865	325	15.8	4.2	19.4	39.1	51.8	44.3	28.0	19.8	14.9
1972[3]	32,576	202	1,174	4,614	9,206	9,606	5,556	1,896	316	15.6	4.3	20.3	38.9	49.8	42.6	29.2	20.2	14.8
1971	31,808	266	1,088	4,412	9,040	9,414	5,352	1,901	324	15.4	4.2	19.3	38.5	49.5	41.9	30.1	21.8	14.6
1970	31,399	259	1,100	4,522	8,898	9,168	5,246	1,893	306	15.4	4.4	19.6	38.2	49.0	42.0	30.8	21.7	14.6
All races, male																		
1993	16,359	47	480	2,747	3,466	3,813	3,710	1,760	326	13.0	2.3	13.6	24.8	38.4	45.0	42.9	34.4	11.3
1992	16,572	39	504	2,711	3,338	4,000	3,832	1,804	338	13.3	2.4	13.7	24.9	40.4	47.2	45.3	37.1	11.7
1991	16,342	38	546	2,598	3,186	4,147	3,715	1,793	305	13.3	2.5	13.4	25.4	41.8	46.3	46.1	34.7	11.8
1990	16,695	35	560	2,652	3,265	4,281	3,813	1,771	306	13.7	2.6	14.2	26.6	43.0	48.1	46.9	36.1	12.3
1989	17,397	50	675	2,726	3,398	4,539	3,954	1,744	303	14.5	3.1	15.2	28.3	45.4	50.6	47.5	36.7	13.0
1988	17,297	49	713	2,610	3,431	4,725	3,894	1,587	281	14.5	3.3	15.0	29.4	46.7	50.5	44.5	34.9	13.2
1987	17,147	62	765	2,475	3,304	4,836	3,821	1,598	279	14.5	3.6	14.7	29.4	47.4	50.2	46.1	35.2	13.3
1986	16,886	61	797	2,296	3,213	4,745	3,994	1,509	264	14.4	3.8	14.1	29.2	46.0	53.5	44.8	34.1	13.2
1985	17,345	62	832	2,217	3,431	5,113	3,943	1,513	225	15.0	4.0	14.2	31.5	49.2	53.8	46.1	29.6	13.8
1984	17,662	76	797	2,184	3,571	5,194	4,084	1,523	227	15.4	3.9	14.6	32.9	50.0	56.6	47.7	30.5	14.3
1983	17,628	55	820	2,069	3,686	5,309	4,028	1,448	206	15.5	4.1	14.4	34.0	51.3	56.6	46.5	28.2	14.5
1982	18,004	80	821	2,102	3,936	5,393	4,095	1,360	211	16.0	4.2	15.3	36.2	52.3	58.6	44.8	29.5	15.0
1981	18,978	84	820	2,222	4,264	5,694	4,265	1,380	244	17.0	4.2	17.2	39.0	55.6	62.0	46.7	34.9	16.1
1980	19,866	101	868	2,339	4,725	6,012	4,276	1,307	225	18.1	4.7	18.6	42.9	59.2	63.3	45.6	33.0	17.2
1979	19,455	90	851	2,371	4,740	5,832	4,164	1,205	193	17.8	4.8	19.2	42.8	58.2	62.7	42.7	28.9	17.1
1978	19,693	100	795	2,340	4,851	6,018	4,134	1,240	204	18.2	4.6	19.6	43.4	61.0	63.7	45.0	31.7	17.5
1977	20,167	108	853	2,367	5,240	6,236	3,969	1,212	175	18.9	5.1	20.6	46.5	64.3	62.5	44.9	28.2	18.3
1976	20,668	106	790	2,566	5,474	6,426	3,976	1,141	180	19.5	4.9	22.8	48.1	67.3	64.2	43.0	30.2	19.1
1975	20,830	109	793	2,527	5,630	6,436	4,000	1,164	168	19.9	5.1	22.7	49.2	68.5	66.1	44.6	28.8	19.4
1974	21,806	128	804	2,711	6,027	6,581	4,214	1,170	164	21.0	5.4	24.4	52.6	70.8	71.1	45.4	29.1	20.6
1973[3]	21,782	118	785	2,827	5,986	6,791	3,973	1,115	181	21.2	5.5	25.5	52.3	73.8	68.5	43.9	33.5	20.8
1972[3]	21,422	94	716	2,980	6,050	6,532	3,736	1,126	186	21.0	5.3	26.8	53.1	71.8	65.7	44.9	35.5	20.8
1971	20,680	124	685	2,763	5,823	6,380	3,578	1,140	176	20.5	5.4	24.8	51.4	71.1	64.2	46.0	34.7	20.2
1970	20,382	116	688	2,790	5,691	6,217	3,583	1,126	166	20.5	5.6	24.9	50.6	70.3	65.6	46.0	33.9	20.2

Table 2. Age-specific number of deaths, age-specific death rates, and age-adjusted death rates[1] from all liver cirrhosis (ICD-9: 571 and 572.3), United States, 1970–93. (Continued)

Race, sex, and year	Number of deaths, by age group									Deaths per 100,000 population, by age group								Age-adjusted deaths per 100,000 population
	All[2]	0–24	25–34	35–44	45–54	55–64	65–74	75–84	85+	All	25–34	35–44	45–54	55–64	65–74	75–84	85+	
All races, female																		
1993	8,982	34	246	1,025	1,257	1,824	2,414	1,759	420	6.8	1.2	5.0	8.6	16.6	23.2	26.6	17.0	4.9
1992	8,835	31	265	908	1,254	1,807	2,468	1,641	461	6.8	1.2	4.5	8.9	16.4	23.9	25.1	19.5	4.9
1991	9,220	28	318	998	1,284	1,929	2,543	1,682	434	7.1	1.5	5.0	9.7	17.4	24.8	26.2	19.0	5.2
1990	9,225	41	334	971	1,252	2,051	2,498	1,668	407	7.2	1.5	5.1	9.7	18.4	24.6	26.5	18.5	5.3
1989	9,426	41	310	892	1,346	2,248	2,566	1,617	405	7.5	1.4	4.8	10.7	20.0	25.6	26.2	19.0	5.6
1988	9,275	38	348	971	1,370	2,295	2,409	1,529	314	7.4	1.6	5.5	11.2	20.1	24.3	25.4	15.2	5.6
1987	9,204	43	382	956	1,336	2,276	2,423	1,460	327	7.4	1.8	5.5	11.3	19.7	24.7	24.8	16.2	5.7
1986	9,424	48	389	911	1,433	2,458	2,500	1,368	316	7.6	1.8	5.4	12.3	21.1	25.9	23.8	16.1	6.0
1985	9,582	38	418	909	1,564	2,473	2,467	1,394	317	7.8	2.0	5.6	13.6	21.0	25.9	24.9	16.7	6.2
1984	9,806	50	371	900	1,673	2,662	2,525	1,357	267	8.1	1.8	5.8	14.5	22.6	26.9	24.9	14.5	6.5
1983	9,786	66	390	898	1,775	2,788	2,349	1,245	273	8.1	1.9	6.0	15.4	23.7	25.3	23.5	15.3	6.6
1982	9,834	67	383	919	1,790	2,801	2,406	1,231	236	8.3	1.9	6.4	15.5	23.9	26.3	23.8	13.8	6.7
1981	10,473	76	376	1,025	2,149	2,967	2,507	1,112	257	8.9	1.9	7.6	18.4	25.4	27.9	22.1	15.6	7.4
1980	10,864	79	425	1,159	2,352	3,069	2,462	1,082	234	9.3	2.3	8.9	19.9	26.6	27.9	22.3	15.0	7.9
1979	10,396	65	378	1,131	2,402	2,978	2,273	961	207	9.0	2.1	8.8	20.2	26.1	26.2	20.2	13.8	7.8
1978	10,373	78	385	1,166	2,602	2,978	2,075	892	193	9.1	2.2	9.4	21.7	26.6	24.4	19.2	13.5	8.0
1977	10,681	87	406	1,227	2,665	3,025	2,239	850	177	9.5	2.4	10.2	22.0	27.5	26.9	18.8	13.1	8.4
1976	10,785	77	382	1,320	2,789	3,132	2,064	844	173	9.7	2.3	11.2	22.8	29.0	25.4	19.2	13.6	8.6
1975	10,793	106	376	1,281	2,917	3,252	1,942	766	150	9.8	2.4	11.0	23.7	30.6	24.6	17.6	12.0	8.8
1974	11,513	99	453	1,526	3,178	3,345	1,994	759	158	10.5	3.0	13.1	25.8	32.0	25.9	17.9	13.5	9.6
1973[3]	11,568	104	416	1,585	3,319	3,323	1,925	750	144	10.7	2.9	13.6	26.9	32.2	25.7	18.2	13.1	9.8
1972[3]	11,154	108	458	1,634	3,156	3,074	1,820	770	130	10.4	3.3	14.0	25.7	30.1	24.8	19.4	12.5	9.6
1971	11,128	142	403	1,649	3,217	3,034	1,774	761	148	10.5	3.1	14.1	26.4	30.2	24.7	19.8	15.1	9.7
1970	11,017	143	412	1,732	3,207	2,951	1,663	767	140	10.5	3.2	14.6	26.6	29.9	23.7	20.7	15.2	9.8
White, male																		
1993	13,888	33	373	2,107	2,791	3,283	3,332	1,652	311	13.2	2.1	12.3	23.0	37.7	45.1	44.3	36.4	10.9
1992	13,978	27	377	2,107	2,654	3,418	3,399	1,675	316	13.4	2.1	12.6	22.8	39.2	46.7	46.3	38.5	11.1
1991	13,850	24	413	1,997	2,536	3,546	3,347	1,692	286	13.4	2.3	12.1	23.3	40.5	46.4	47.9	36.0	11.3
1990	13,950	29	402	1,972	2,528	3,620	3,462	1,644	285	13.6	2.2	12.4	23.7	41.1	48.4	48.0	37.2	11.5
1989	14,492	33	467	1,978	2,680	3,871	3,558	1,623	278	14.3	2.6	12.8	25.7	43.6	50.5	48.8	37.3	12.2
1988	14,471	33	497	1,901	2,682	4,067	3,543	1,473	269	14.4	2.7	12.7	26.4	45.2	50.9	45.6	37.0	12.4
1987	14,259	47	520	1,736	2,546	4,181	3,479	1,487	260	14.2	2.9	11.9	26.1	46.0	50.6	47.3	36.3	12.3
1986	14,174	43	521	1,633	2,543	4,130	3,656	1,396	249	14.3	2.9	11.6	26.5	44.8	54.2	45.7	35.5	12.4
1985	14,402	44	554	1,513	2,688	4,403	3,571	1,416	207	14.6	3.1	11.2	28.2	47.4	53.9	47.6	30.1	12.8
1984	14,874	54	522	1,556	2,846	4,535	3,726	1,416	216	15.2	3.0	11.9	29.9	48.7	57.2	48.9	32.0	13.3
1983	14,910	39	548	1,466	2,970	4,632	3,677	1,370	202	15.3	3.2	11.7	31.2	49.9	57.2	48.6	30.5	13.6
1982	15,323	55	539	1,518	3,187	4,754	3,790	1,271	204	15.9	3.2	12.6	33.3	51.3	60.0	46.2	31.4	14.2
1981	15,946	62	527	1,534	3,394	5,002	3,900	1,292	232	16.6	3.2	13.6	35.1	54.2	62.8	48.2	36.5	14.9
1980	16,492	75	520	1,574	3,745	5,236	3,897	1,226	212	17.4	3.3	14.3	38.3	57.2	63.9	47.2	34.2	15.7
1979	16,178	60	518	1,660	3,744	5,082	3,803	1,127	177	17.1	3.3	15.3	38.0	56.2	63.5	44.1	29.1	15.6
1978	16,413	67	461	1,579	3,923	5,249	3,775	1,163	187	17.5	3.1	15.0	39.3	59.0	64.5	46.5	31.9	16.0
1977	16,727	69	495	1,623	4,160	5,426	3,653	1,130	167	18.0	3.4	16.0	41.3	62.0	63.8	46.0	29.5	16.7
1976	17,221	65	441	1,762	4,418	5,618	3,650	1,086	174	18.7	3.1	17.8	43.3	65.2	65.3	45.0	32.1	17.4
1975	17,458	72	435	1,789	4,591	5,650	3,672	1,090	157	19.1	3.2	18.2	44.7	66.6	67.3	45.8	29.6	17.9
1974	18,322	92	449	1,880	4,913	5,820	3,905	1,102	157	20.2	3.4	19.2	47.8	69.3	73.1	46.8	30.7	18.9
1973[3]	18,372	67	449	1,963	4,943	6,061	3,676	1,049	162	20.4	3.6	20.0	48.0	72.9	70.2	45.1	33.0	19.2
1972[3]	17,964	56	392	2,102	4,932	5,846	3,400	1,062	172	20.1	3.3	21.3	48.1	71.0	66.2	46.1	36.2	19.0
1971	17,672	78	389	1,982	4,887	5,773	3,306	1,081	166	20.0	3.5	20.0	47.9	71.0	65.6	47.4	36.1	18.9
1970	17,389	84	361	1,969	4,775	5,622	3,335	1,078	161	19.9	3.3	19.7	47.1	70.2	67.4	47.8	36.2	18.8

Table 2. Age-specific number of deaths, age-specific death rates, and age-adjusted death rates[1] from all liver cirrhosis (ICD-9: 571 and 572.3), United States, 1970–93. (Continued)

Race, sex, and year	Number of deaths, by age group									Deaths per 100,000 population, by age group								Age-adjusted deaths per 100,000 population
	All[2]	0–24	25–34	35–44	45–54	55–64	65–74	75–84	85+	All	25–34	35–44	45–54	55–64	65–74	75–84	85+	
Black, male																		
1993	2,113	12	87	539	583	467	325	86	10	13.9	3.3	23.7	44.0	51.8	49.5	29.9	13.5	16.2
1992	2,197	10	97	529	587	504	358	93	18	14.6	3.7	24.2	46.3	56.4	55.4	32.5	25.0	17.3
1991	2,148	13	108	533	569	522	308	79	11	14.6	4.2	25.5	47.2	58.9	48.8	28.0	15.9	17.5
1990	2,400	5	138	603	641	587	305	100	17	16.5	5.3	30.4	54.3	66.7	49.4	35.8	25.4	19.9
1989	2,524	15	176	664	634	585	340	93	14	17.7	6.8	35.2	54.7	66.4	55.9	34.0	21.4	21.3
1988	2,485	15	194	642	654	578	299	92	10	17.7	7.6	35.8	57.8	65.3	49.7	34.2	15.5	21.4
1987	2,584	11	222	684	676	589	289	95	14	18.6	8.8	40.0	61.1	66.3	48.5	35.8	22.0	22.6
1986	2,416	14	249	608	584	548	305	92	12	17.6	10.1	37.2	53.9	61.6	51.8	35.4	19.2	21.4
1985	2,636	15	249	648	662	642	326	77	14	19.5	10.4	41.9	61.9	72.3	55.8	30.2	22.8	24.0
1984	2,468	19	242	565	638	595	310	86	10	18.5	10.4	38.4	60.4	67.2	53.5	34.4	16.7	22.9
1983	2,440	15	240	547	649	612	309	63	4	18.5	10.6	39.1	62.1	69.6	53.5	25.7	6.8	23.2
1982	2,420	23	249	535	674	592	269	72	6	18.6	11.4	40.0	65.1	67.9	46.9	30.0	10.6	23.5
1981	2,746	20	264	621	794	628	335	76	6	21.4	12.5	48.7	77.0	72.7	58.7	32.4	10.9	27.3
1980	3,031	25	311	683	889	708	332	65	12	24.0	15.8	55.2	86.7	82.8	58.5	28.5	22.6	30.6
1979	2,964	25	292	648	909	685	329	60	14	24.1	15.7	54.8	89.5	80.8	58.4	26.8	27.1	30.8
1978	2,944	26	301	674	843	702	321	59	16	24.3	17.0	58.3	83.1	84.1	58.2	27.0	32.2	31.0
1977	3,140	30	315	675	1,000	747	293	71	6	26.2	18.6	59.6	98.6	90.8	54.1	33.3	12.5	33.7
1976	3,142	36	310	720	977	755	290	46	6	26.6	19.2	64.8	96.0	93.0	54.6	22.1	13.0	34.2
1975	3,084	34	331	673	957	718	299	63	9	26.5	21.5	61.4	94.2	89.9	57.5	31.2	19.9	34.0
1974	3,205	30	318	762	1,044	702	286	54	6	27.9	21.7	69.6	102.8	89.0	56.0	27.6	13.6	35.9
1973[3]	3,120	51	297	794	965	671	266	55	17	27.5	21.3	72.7	95.2	86.2	53.2	29.3	40.4	35.3
1972[3]	3,180	36	302	820	1,056	610	286	58	12	28.4	22.7	75.4	104.9	79.2	58.6	32.0	29.3	36.6
1971	2,757	43	275	729	866	542	238	55	8	25.1	21.7	67.3	86.9	71.5	50.1	31.3	20.0	32.2
1970	2,771	31	304	756	855	557	219	43	5	25.7	24.6	69.7	86.9	74.9	47.4	25.4	12.9	32.9
White, female																		
1993	7,571	21	168	698	957	1,532	2,172	1,628	393	6.9	1.0	4.1	7.7	16.2	23.6	27.1	17.4	4.6
1992	7,428	23	174	628	958	1,486	2,187	1,542	429	6.8	1.0	3.8	8.0	15.7	23.9	26.1	19.9	4.6
1991	7,646	18	198	646	949	1,616	2,241	1,567	409	7.1	1.1	3.9	8.5	16.9	24.6	26.9	19.6	4.8
1990	7,621	26	203	619	930	1,670	2,245	1,538	387	7.1	1.1	3.9	8.5	17.3	24.8	26.9	19.1	4.9
1989	7,835	23	185	566	1,006	1,857	2,291	1,520	387	7.4	1.0	3.7	9.3	19.0	25.6	27.1	19.8	5.1
1988	7,600	27	207	616	998	1,915	2,142	1,401	294	7.2	1.2	4.1	9.5	19.2	24.2	25.6	15.4	5.1
1987	7,642	24	223	606	988	1,918	2,195	1,374	314	7.3	1.3	4.1	9.8	19.0	25.0	25.6	16.9	5.2
1986	7,869	33	213	593	1,081	2,108	2,253	1,284	303	7.6	1.2	4.2	10.9	20.5	26.0	24.6	16.8	5.5
1985	7,922	30	225	574	1,188	2,103	2,217	1,286	299	7.7	1.3	4.2	12.0	20.3	26.0	25.2	17.1	5.6
1984	8,169	32	185	574	1,322	2,245	2,290	1,266	255	8.0	1.1	4.3	13.4	21.5	27.2	25.4	15.0	5.9
1983	8,146	36	204	572	1,378	2,386	2,126	1,179	263	8.0	1.2	4.5	13.9	22.9	25.5	24.3	16.0	6.0
1982	8,210	38	192	593	1,389	2,435	2,183	1,160	220	8.1	1.2	4.9	13.9	23.4	26.6	24.6	13.9	6.2
1981	8,648	50	178	652	1,668	2,554	2,254	1,044	244	8.6	1.1	5.7	16.5	24.6	27.9	22.7	16.1	6.7
1980	8,876	41	204	734	1,812	2,615	2,227	1,017	224	8.9	1.3	6.5	17.6	25.3	28.0	22.8	15.6	7.1
1979	8,574	49	181	727	1,882	2,581	2,058	895	200	8.6	1.2	6.6	18.1	25.3	26.3	20.5	14.4	7.0
1978	8,464	48	188	743	2,022	2,558	1,871	844	188	8.6	1.2	6.9	19.2	25.5	24.4	19.8	14.2	7.1
1977	8,721	46	185	782	2,065	2,616	2,063	791	168	9.0	1.3	7.6	19.4	26.6	27.5	19.0	13.4	7.4
1976	8,833	40	186	829	2,202	2,736	1,876	797	167	9.1	1.3	8.2	20.4	28.2	25.5	19.6	14.2	7.7
1975	8,871	72	170	801	2,350	2,844	1,765	730	137	9.3	1.2	8.0	21.5	29.8	24.7	18.2	11.9	7.9
1974	9,421	62	223	996	2,511	2,923	1,839	717	150	9.9	1.7	9.9	22.9	31.1	26.4	18.3	13.8	8.5
1973[3]	9,444	69	195	1,023	2,632	2,919	1,755	708	143	10.0	1.5	10.1	24.0	31.4	25.8	18.6	14.1	8.7
1972[3]	9,174	68	194	1,044	2,578	2,750	1,670	744	124	9.8	1.6	10.3	23.6	29.9	25.0	20.2	12.9	8.5
1971	9,218	101	192	1,089	2,619	2,704	1,646	728	139	10.0	1.7	10.6	24.1	29.8	25.2	20.4	15.3	8.7
1970	9,075	102	172	1,121	2,658	2,624	1,532	728	137	9.9	1.5	10.8	24.6	29.4	23.9	21.1	16.1	8.7

Table 2. Age-specific number of deaths, age-specific death rates, and age-adjusted death rates[1] from all liver cirrhosis (ICD-9: 571 and 572.3), United States, 1970–93.
(Continued)

Race, sex, and year	Number of deaths, by age group									Deaths per 100,000 population, by age group								Age-adjusted deaths per 100,000 population
	All[2]	0–24	25–34	35–44	45–54	55–64	65–74	75–84	85+	All	25–34	35–44	45–54	55–64	65–74	75–84	85+	
Black, female																		
1993	1,133	11	60	261	253	232	197	99	20	6.7	2.1	10.0	15.8	19.9	21.3	19.3	11.0	6.6
1992	1,140	6	66	239	246	255	221	85	22	6.8	2.3	9.5	16.1	22.1	24.1	16.6	12.9	6.9
1991	1,336	8	100	310	285	261	258	91	21	8.1	3.4	12.8	19.6	22.8	28.5	18.1	12.9	8.3
1990	1,363	13	100	317	277	321	212	104	18	8.4	3.4	13.8	19.5	28.2	23.8	20.9	11.4	8.7
1989	1,337	15	101	279	282	333	231	78	17	8.4	3.5	12.7	20.3	29.4	26.4	16.1	11.1	8.8
1988	1,431	8	114	318	313	322	231	106	18	9.1	4.0	15.2	22.9	28.4	26.7	22.5	12.2	9.5
1987	1,345	14	144	316	298	291	198	73	10	8.7	5.1	15.7	22.3	25.7	23.2	15.9	7.0	9.2
1986	1,347	14	153	283	306	311	210	66	4	8.8	5.5	14.7	23.3	27.6	24.9	14.8	2.9	9.5
1985	1,446	7	172	290	328	320	221	93	13	9.6	6.3	15.8	25.3	28.5	26.6	21.6	9.8	10.2
1984	1,446	18	168	277	308	374	210	80	10	9.7	6.3	15.8	24.0	33.6	25.5	19.2	7.8	10.5
1983	1,460	22	172	294	345	366	192	60	9	9.9	6.7	17.6	27.1	33.2	23.6	14.9	7.3	11.0
1982	1,441	27	169	292	356	325	200	58	13	9.9	6.8	18.2	28.2	29.8	24.9	14.9	11.1	11.0
1981	1,616	21	171	333	420	380	223	56	12	11.3	7.1	21.8	33.3	35.3	28.2	14.9	10.7	12.7
1980	1,776	36	191	371	487	419	211	54	7	12.6	8.4	24.9	38.7	39.5	27.2	15.0	6.6	14.4
1979	1,619	14	164	356	468	357	200	55	5	11.8	7.6	24.7	37.5	34.1	26.1	15.7	4.9	13.5
1978	1,701	24	174	372	522	378	186	40	4	12.6	8.5	26.5	42.1	36.8	25.0	11.8	4.1	14.6
1977	1,762	37	181	396	545	377	166	52	8	13.2	9.2	28.8	44.3	37.4	22.9	16.0	8.7	15.4
1976	1,734	30	167	428	532	358	170	40	6	13.2	8.8	31.7	43.4	36.2	24.2	12.9	6.9	15.5
1975	1,725	30	169	423	524	372	164	30	12	13.4	9.4	31.9	43.0	38.5	24.2	9.9	14.1	15.7
1974	1,885	35	203	472	603	390	146	30	5	14.8	11.8	35.7	49.9	41.0	22.1	10.4	6.2	17.6
1973[3]	1,937	31	195	504	629	379	158	38	1	15.5	11.9	38.3	52.5	40.6	24.8	13.9	1.3	18.4
1972[3]	1,830	40	240	530	538	308	144	24	4	14.9	15.3	40.4	45.6	33.6	23.2	9.3	5.6	17.7
1971	1,713	35	181	504	545	296	117	28	7	14.1	12.1	38.6	46.8	33.0	19.4	11.4	10.4	16.9
1970	1,766	39	216	550	504	303	118	33	2	14.9	14.7	42.0	44.2	34.6	20.2	14.3	3.2	17.7

[1] Rates per 100,000 population computed by direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940.

[2] Includes deaths in which age of decedent was unknown; age-specific numbers of deaths may not sum to total.

[3] Deaths based on a 50-percent sample.

Table 3. Age-specific number of deaths, age-specific death rates, and age-adjusted death rates[1] from liver cirrhosis with and without mention of alcohol, United States, 1970–93.

ICDA-8 code and year	Number of deaths, by age group									Deaths per 100,000 population, by age group								Age-adjusted deaths per 100,000 population
	All[2]	0–24	25–34	35–44	45–54	55–64	65–74	75–84	85+	All	25–34	35–44	45–54	55–64	65–74	75–84	85+	
Alcohol-related liver cirrhosis (571.0)																		
1993	11,653	13	455	2,426	2,887	2,882	2,219	688	72	4.5	1.1	6.0	10.1	13.8	11.9	6.4	2.1	4.0
1992	11,868	12	514	2,383	2,819	3,067	2,303	672	96	4.7	1.2	6.0	10.3	14.7	12.5	6.4	2.9	4.1
1991	11,688	13	542	2,378	2,654	3,029	2,245	741	77	4.6	1.3	6.1	10.3	14.4	12.3	7.2	2.4	4.2
1990	11,985	19	580	2,381	2,700	3,198	2,320	701	76	4.8	1.3	6.3	10.7	15.2	12.8	6.9	2.5	4.3
1989	12,308	23	650	2,302	2,862	3,376	2,328	696	65	5.0	1.5	6.3	11.6	15.9	13.0	7.1	2.2	4.5
1988	11,792	17	665	2,163	2,710	3,376	2,169	630	58	4.8	1.5	6.2	11.3	15.7	12.3	6.6	2.0	4.4
1987	11,265	27	665	2,033	2,575	3,282	2,031	582	64	4.6	1.6	5.9	11.2	15.1	11.7	6.2	2.3	4.3
1986	11,060	30	708	1,866	2,482	3,188	2,174	548	58	4.6	1.7	5.7	11.0	14.5	12.7	6.0	2.1	4.3
1985	11,288	17	725	1,817	2,598	3,432	2,121	534	38	4.7	1.7	5.7	11.6	15.5	12.6	6.0	1.4	4.4
1984	11,386	25	640	1,791	2,651	3,490	2,168	566	50	4.8	1.6	5.9	11.9	15.8	13.1	6.5	1.9	4.5
1983	11,076	22	653	1,625	2,694	3,444	2,091	509	35	4.7	1.6	5.6	12.1	15.6	12.8	6.0	1.4	4.4
1982	11,293	28	653	1,669	2,830	3,497	2,110	466	36	4.9	1.7	6.0	12.6	15.9	13.1	5.7	1.5	4.6
1981	12,085	35	630	1,772	3,219	3,726	2,166	472	60	5.3	1.6	6.7	14.3	17.0	13.6	5.9	2.6	5.0
1980	12,938	36	694	1,942	3,554	3,923	2,274	453	56	5.7	1.9	7.6	15.6	18.1	14.6	5.9	2.5	5.5
1979	12,547	28	652	1,867	3,520	3,864	2,189	381	42	5.6	1.8	7.4	15.3	18.0	14.3	5.0	1.9	5.4
1978	12,828	38	613	1,873	3,705	3,957	2,138	452	47	5.8	1.8	7.7	16.0	18.8	14.3	6.1	2.3	5.6
1977	13,029	40	640	1,906	3,838	4,028	2,109	420	44	5.9	1.9	8.1	16.4	19.5	14.4	5.8	2.2	5.8
1976	13,289	37	605	2,061	3,995	4,084	2,068	402	33	6.1	1.9	8.9	16.9	20.1	14.4	5.7	1.8	6.0
1975	12,932	35	601	1,960	4,076	3,968	1,890	367	32	6.0	1.9	8.6	17.2	19.8	13.6	5.3	1.7	5.9
1974	13,151	36	608	2,049	4,235	3,962	1,867	349	41	6.2	2.0	9.0	17.8	20.1	13.7	5.1	2.4	6.1
1973[3]	12,624	44	529	2,085	4,032	3,850	1,711	332	39	6.0	1.8	9.2	17.0	19.7	12.9	5.0	2.4	5.9
1972[3]	12,576	30	536	2,226	4,072	3,672	1,692	312	34	6.0	2.0	9.8	17.2	19.0	13.0	4.8	2.2	6.0
1971	11,892	37	517	2,072	3,826	3,563	1,504	335	35	5.7	2.0	9.1	16.3	18.7	11.8	5.3	2.4	5.7
1970	11,207	15	513	2,040	3,658	3,251	1,406	300	22	5.5	2.0	8.9	15.7	17.4	11.3	4.9	1.6	5.4
Specified liver cirrhosis (571.8)																		
1993	1,614	36	74	244	230	251	377	329	73	0.6	0.2	0.6	0.8	1.2	2.0	3.1	2.1	0.5
1992	1,789	30	79	249	245	282	446	357	100	0.7	0.2	0.6	0.9	1.3	2.4	3.4	3.1	0.5
1991	1,821	30	110	227	272	330	440	338	70	0.7	0.3	0.6	1.1	1.6	2.4	3.3	2.2	0.6
1990	1,811	23	119	241	250	327	459	316	73	0.7	0.3	0.6	0.9	1.6	2.5	3.1	2.4	0.6
1989	1,932	32	102	287	294	387	461	293	75	0.8	0.2	0.8	1.2	1.8	2.6	3.0	2.5	0.6
1988	2,067	35	161	316	309	410	473	295	67	0.8	0.4	0.9	1.3	1.9	2.7	3.1	2.3	0.7
1987	2,279	39	186	339	333	470	520	316	76	0.9	0.4	1.0	1.4	2.2	3.0	3.4	2.7	0.8
1986	2,179	45	193	325	303	469	499	276	68	0.9	0.5	1.0	1.3	2.1	2.9	3.0	2.5	0.8
1985	2,447	46	221	357	403	543	507	303	64	1.0	0.5	1.1	1.8	2.5	3.0	3.4	2.4	0.9
1984	2,555	54	227	383	431	574	513	313	60	1.1	0.6	1.3	1.9	2.6	3.1	3.6	2.3	0.9
1983	2,495	62	215	357	424	607	496	281	50	1.1	0.5	1.2	1.9	2.7	3.0	3.3	2.0	0.9
1982	2,669	63	226	371	507	645	511	292	53	1.2	0.6	1.3	2.3	2.9	3.2	3.6	2.2	1.0
1981	2,654	76	245	391	537	592	516	233	63	1.2	0.6	1.5	2.4	2.7	3.3	2.9	2.7	1.1
1980	3,000	79	285	452	588	714	558	249	72	1.3	0.8	1.8	2.6	3.3	3.6	3.2	3.2	1.2
1979	2,764	65	244	413	613	633	493	234	65	1.2	0.7	1.6	2.7	3.0	3.2	3.1	3.0	1.1
1978	3,641	60	252	516	839	954	676	284	55	1.6	0.7	2.1	3.6	4.5	4.5	3.8	2.7	1.5
1977	3,908	78	262	504	963	1,034	710	289	63	1.8	0.8	2.1	4.1	5.0	4.8	4.0	3.2	1.7
1976	4,092	65	237	560	1,000	1,132	700	336	58	1.9	0.7	2.4	4.2	5.6	4.9	4.8	3.1	1.8
1975	4,549	79	280	575	1,126	1,311	812	315	50	2.1	0.9	2.5	4.7	6.5	5.8	4.5	2.7	2.0
1974	5,025	80	293	735	1,315	1,311	908	333	49	2.4	1.0	3.2	5.5	6.6	6.7	4.9	2.8	2.2
1973[3]	5,341	73	322	742	1,475	1,498	867	303	57	2.5	1.1	3.3	6.2	7.7	6.5	4.6	3.5	2.4
1972[3]	5,140	78	272	780	1,360	1,394	862	322	70	2.5	1.0	3.4	5.7	7.2	6.6	5.0	4.5	2.3
1971	5,361	101	255	845	1,396	1,434	901	354	72	2.6	1.0	3.7	5.9	7.5	7.1	5.6	4.8	2.5
1970	5,520	98	261	864	1,513	1,491	870	362	59	2.7	1.0	3.7	6.5	8.0	7.0	5.9	4.2	2.6

Table 3. Age-specific number of deaths, age-specific death rates, and age-adjusted death rates[1] from liver cirrhosis with and without mention of alcohol, United States, 1970–93. (Continued)

ICDA-8 code and year	Number of deaths, by age group									Deaths per 100,000 population, by age group								Age-adjusted deaths per 100,000 population
	All[2]	0–24	25–34	35–44	45–54	55–64	65–74	75–84	85+	All	25–34	35–44	45–54	55–64	65–74	75–84	85+	
Unspecified liver cirrhosis (571.9)																		
1993	12,074	32	197	1,102	1,606	2,504	3,528	2,502	601	4.7	0.5	2.7	5.6	12.0	18.9	23.3	17.6	3.5
1992	11,750	28	176	987	1,528	2,458	3,551	2,416	603	4.6	0.4	2.5	5.6	11.7	19.2	23.0	18.4	3.4
1991	12,053	23	212	991	1,554	2,717	3,573	2,396	592	4.8	0.5	2.5	6.0	12.9	19.5	23.2	18.7	3.6
1990	12,124	34	195	1,001	1,567	2,807	3,532	2,422	564	4.9	0.5	2.7	6.2	13.3	19.5	24.0	18.5	3.7
1989	12,583	36	233	1,029	1,588	3,024	3,731	2,372	568	5.1	0.5	2.8	6.5	14.2	20.9	24.1	19.2	3.9
1988	12,713	35	235	1,102	1,782	3,234	3,661	2,191	470	5.2	0.5	3.1	7.5	15.0	20.8	22.8	16.3	4.1
1987	12,807	39	296	1,059	1,732	3,360	3,693	2,160	466	5.3	0.7	3.1	7.5	15.5	21.2	23.1	16.6	4.2
1986	13,071	34	285	1,016	1,861	3,546	3,821	2,053	454	5.4	0.7	3.1	8.2	16.1	22.3	22.5	16.6	4.3
1985	13,192	37	304	952	1,994	3,611	3,782	2,070	440	5.5	0.7	3.0	8.9	16.3	22.5	23.3	16.5	4.4
1984	13,527	47	301	910	2,162	3,792	3,928	2,001	384	5.7	0.7	3.0	9.7	17.1	23.7	23.1	14.8	4.7
1983	13,843	37	342	985	2,343	4,046	3,790	1,903	394	5.9	0.9	3.4	10.5	18.3	23.1	22.6	15.7	4.9
1982	13,876	56	325	981	2,389	4,052	3,880	1,833	358	6.0	0.8	3.5	10.7	18.4	24.1	22.4	14.7	5.0
1981	14,712	49	321	1,084	2,657	4,343	4,090	1,787	378	6.4	0.8	4.1	11.8	19.8	25.8	22.4	16.1	5.4
1980	14,792	65	314	1,104	2,935	4,444	3,906	1,687	331	6.5	0.8	4.3	12.9	20.5	25.1	21.8	14.8	5.6
1979	14,540	62	333	1,222	3,009	4,313	3,755	1,551	293	6.5	0.9	4.9	13.1	20.1	24.5	20.4	13.5	5.6
1978	13,597	80	315	1,117	2,909	4,085	3,395	1,396	295	6.1	0.9	4.6	12.5	19.4	22.7	18.9	14.2	5.3
1977	13,911	77	357	1,184	3,104	4,199	3,389	1,353	245	6.3	1.1	5.0	13.3	20.3	23.1	18.7	12.4	5.6
1976	14,072	81	330	1,265	3,268	4,342	3,272	1,247	262	6.5	1.0	5.5	13.8	21.3	22.9	17.7	14.0	5.8
1975	14,142	101	288	1,273	3,345	4,409	3,240	1,248	236	6.6	0.9	5.6	14.1	22.0	23.2	17.9	12.9	5.9
1974	15,143	111	356	1,453	3,655	4,653	3,433	1,247	232	7.1	1.2	6.4	15.4	23.5	25.2	18.3	13.4	6.4
1973[3]	15,385	105	350	1,585	3,798	4,766	3,320	1,230	229	7.3	1.2	7.0	16.0	24.4	25.0	18.5	14.0	6.6
1972[3]	14,860	94	366	1,608	3,774	4,540	3,002	1,262	212	7.1	1.3	7.1	16.0	23.5	23.0	19.5	13.6	6.5
1971	14,555	128	316	1,495	3,818	4,417	2,947	1,212	217	7.0	1.2	6.5	16.2	23.2	23.1	19.2	14.6	6.4
1970	14,672	146	326	1,618	3,727	4,426	2,970	1,231	225	7.2	1.3	7.0	16.0	23.7	23.8	20.0	15.9	6.6

[1] Rates per 100,000 population computed by direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940.

[2] Includes deaths in which age of decedent was unknown; age-specific numbers of deaths may not sum to total.

[3] Deaths based on a 50-percent sample.

Table 4. Age-adjusted death rates[1] from liver cirrhosis with and without mention of alcohol by race and sex, United States, 1970–93.

ICDA-8 code and year	All races and both sexes	White Male	White Female	Black Male	Black Female
Alcohol-related cirrhosis (571.0)					
1993	4.0	5.9	1.8	9.5	3.2
1992	4.1	6.1	1.8	10.6	3.7
1991	4.2	6.0	1.9	10.6	4.3
1990	4.3	6.1	1.9	12.5	4.7
1989	4.5	6.4	2.0	13.3	4.7
1988	4.4	6.1	2.0	13.2	4.9
1987	4.3	5.9	1.9	13.5	4.6
1986	4.3	5.8	2.0	12.6	4.6
1985	4.4	6.0	2.0	14.0	5.1
1984	4.5	6.2	2.1	12.8	5.1
1983	4.4	6.1	2.1	12.0	5.0
1982	4.6	6.4	2.2	12.3	5.1
1981	5.0	6.7	2.5	14.6	5.8
1980	5.5	7.2	2.6	16.4	6.7
1979	5.4	7.1	2.6	16.1	6.5
1978	5.6	7.2	2.8	16.1	7.1
1977	5.8	7.4	2.9	17.6	7.0
1976	6.0	7.8	2.9	18.3	7.4
1975	5.9	7.8	2.9	17.1	7.1
1974	6.1	8.0	3.0	17.2	7.4
1973	5.9	7.8	2.9	16.1	7.3
1972[2]	6.0	7.8	3.0	17.1	7.2
1971	5.7	7.5	2.8	15.5	7.1
1970	5.4	7.2	2.7	15.1	7.1
Specified cirrhosis (571.8)					
1993	0.5	0.5	0.4	0.8	0.6
1992	0.5	0.5	0.5	1.0	0.6
1991	0.6	0.5	0.5	1.0	0.8
1990	0.6	0.5	0.5	1.1	0.7
1989	0.6	0.6	0.6	1.2	0.7
1988	0.7	0.7	0.6	1.2	0.9
1987	0.8	0.8	0.6	1.5	1.0
1986	0.8	0.7	0.6	1.3	1.1
1985	0.9	0.8	0.7	1.9	1.1
1984	0.9	0.9	0.8	2.0	1.3
1983	0.9	0.8	0.8	2.3	1.5
1982	1.0	0.9	0.8	2.7	1.4
1981	1.1	1.0	0.8	2.9	1.7
1980	1.2	1.1	0.9	3.5	1.9
1979	1.1	1.0	0.8	3.6	1.9
1978	1.5	1.6	1.1	4.0	2.3
1977	1.7	1.7	1.1	4.9	2.6
1976	1.8	1.9	1.2	4.7	2.6
1975	2.0	2.1	1.4	5.7	2.7
1974	2.2	2.4	1.5	6.9	3.6
1973	2.4	2.6	1.6	7.1	4.1
1972[2]	2.3	2.5	1.6	6.8	3.6
1971	2.5	2.8	1.7	5.9	3.6
1970	2.6	2.9	1.8	6.3	3.9

Table 4. Age-adjusted death rates[1] from liver cirrhosis with and without mention of alcohol by race and sex, United States, 1970–93. (Continued)

ICDA-8 code and year	All races and both sexes	White		Black	
		Male	Female	Male	Female
Unspecified cirrhosis (571.9)					
1993	3.5	4.6	2.3	5.9	2.8
1992	3.4	4.6	2.3	5.7	2.6
1991	3.6	4.8	2.4	5.9	3.2
1990	3.7	4.9	2.4	6.3	3.3
1989	3.9	5.2	2.6	6.8	3.4
1988	4.1	5.6	2.6	6.9	3.7
1987	4.2	5.6	2.7	7.4	3.7
1986	4.3	5.8	2.9	7.3	3.6
1985	4.4	6.0	2.9	7.7	3.9
1984	4.7	6.3	3.0	7.8	3.9
1983	4.9	6.6	3.1	8.6	4.3
1982	5.0	6.9	3.1	8.1	4.3
1981	5.4	7.3	3.5	9.3	5.1
1980	5.6	7.4	3.6	10.1	5.5
1979	5.6	7.5	3.5	10.5	4.9
1978	5.3	7.2	3.3	10.3	4.9
1977	5.6	7.6	3.4	10.5	5.5
1976	5.8	7.8	3.6	10.8	5.3
1975	5.9	8.0	3.6	11.1	5.6
1974	6.4	8.6	4.1	11.8	6.2
1973	6.6	8.9	4.1	12.0	7.0
1972[2]	6.5	8.7	4.0	12.7	6.9
1971	6.4	8.6	4.2	10.8	6.3
1970	6.6	8.7	4.2	11.5	6.8

[1] Rates per 100,000 population computed by the direct method, using as the standard population the age distribution of the total population of the United States as enumerated in 1940.

[2] Deaths based on a 50-percent sample.